Making Space for Everyone: Library Makerspaces for People with Disabilities

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Michigan Library Association 2024

Presentation Breakdown

What to expect

1. Introduction
    - Who we are and why we're talking about this
2. Accessibility efforts so far
    - How we've used our makerspace and plans for the future
3. Lessons and advice
    - What we've learned and how to apply it to your makerspace

Introduction

Who We Are

Mary Robinson

Jess Holowicki

- Novi Public Library in Novi, MI
  - Mary is our Digital Collections Librarian, founded NPL's makerspace
  - Jess is our Technology Librarian
- Our makerspace: the iCube
  - Formerly the computer lab, opened in 2019
  - We are part of a four person team that runs the space

iCube
inform | inspire | include

How it started

Novi Public Library

STRATEGIC PLAN 2023–2028

Mission

Cultivate Learning
Inspire Creativity
Foster Inclusivity

Vision

A vital community hub for enrichment, exploration and understanding.

Values

Welcoming and Inclusive Environment: We embrace all voices and value diverse perspectives.

Community Focus: We engage through spaces, programs and services to support our community.

Collaboration: We explore partnerships to better connect resources and serve beyond our walls.

Innovation: We evolve with changing needs and are open-minded and adaptable.

Learning: We empower lifelong learners as they discover and cultivate their passions.

Creativity: We encourage adventure and wonder in all we do.

Accessibility at NPL

- Revisited and revised existing accessibility initiatives such as the Universal Access Collections
  - Access kits, Braille books
- Undertaking new initiatives such as Accessibility & Accommodations Policy
- Staff attended training on patrons with disabilities, where we learned that Novi Community Schools has the highest population of ASD students in Oakland County at 22%
  - Our library is right next to the high school
- We reached out to Novi High School's Special Education program to see how the iCube could benefit the students

Why Focus on Accessibility in Makerspaces?

Library makerspaces can provide valuable support to people with disabilities in several ways:

- **Access to Technology -** 3D printers, computers, other equipment that people with disabilities can access and have rewarding making experiences
    - Creation of assistive devices that can be helpful in everyday life
- **Skill Development -** Help individuals build skills that enhance their independence and future employability
    - The HS Special Education program requested for the students to accomplish tasks before the start of the making session, such as cleaning their workspace
- **Mentorship Opportunities -** Experienced makers can mentor individuals with disabilities, guiding them through the creation process and help build skills and confidence

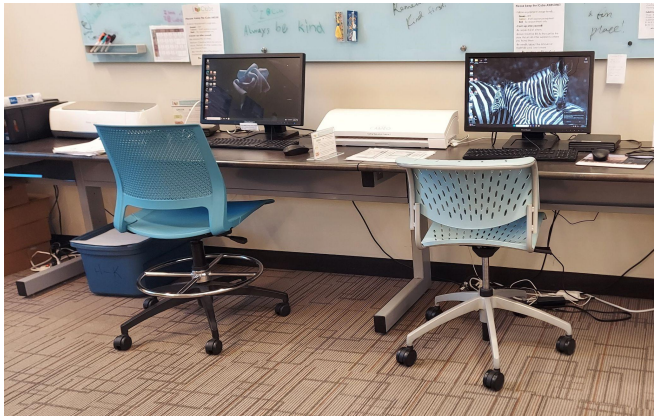
- **Community Connections -** Libraries connect individuals with disabilities to resources, support groups, other community members; facilitate shared experiences within the library
- **Inclusive Environment -** Libraries usually known to be welcoming space and take accessibility seriously; this should extend to the makerspace as well
- **Awareness, Advocacy, and Promotion -** Makerspaces can help promote library programs or community events with custom swag, host programs that raise awareness about the challenges faced by people with disabilities, promote advocacy for accessibility for all

Accessibility efforts so far

Accessibility audit

- Asked a professional, certified third party to look over the iCube for us
- This showed us what we we’re doing right, what needs to be changed, and what could be added
- We’ll discuss one area where we did well and one area where we needed improvement

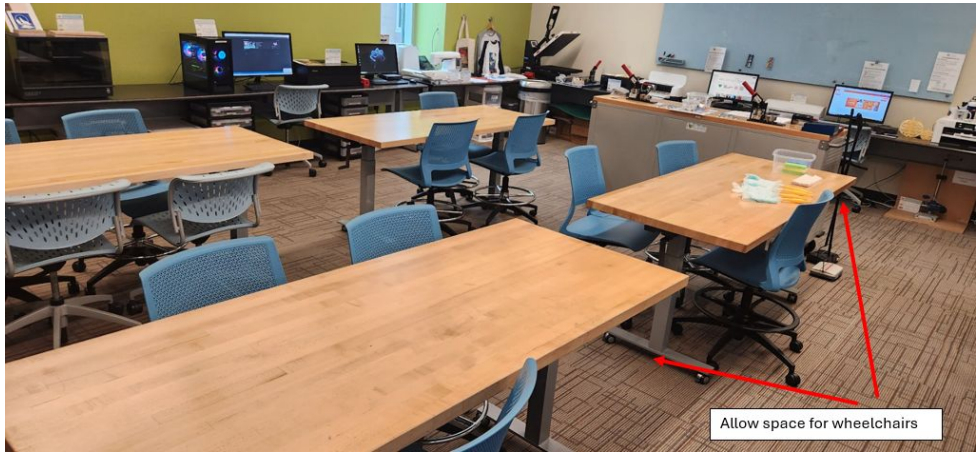
Audit - Tables, furniture, and spaces



- When establishing our makerspace, we repurposed computer lab tables
- Against wall around room's perimeter
- Used for computers and large, heavy equipment
- These are 28 in high

- Adjustable height tables and adjustable height chairs
- Clustered together in center of room
- All-purpose work space (cutting, drawing, gluing, project prep, etc.)

- Hand crank allows for easy height adjustment to accommodate patrons who can’t use high top tables or chairs

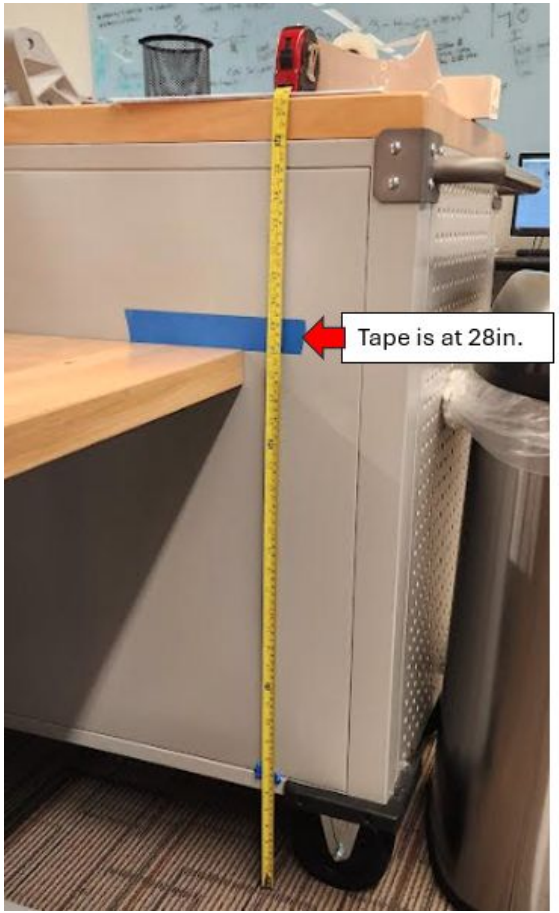


- Can spread out and lower tables and chairs for programs in the iCube

- The Americans with Disabilities Act (ADA) requires desks for wheelchair users be between **28 and 34 inches high** from the floor to the top of the surface. **At least 27 inches of knee clearance** between the floor and underside of the desk. **Area of 30 inches by 48 inches** of clear floor space at each accessible seating location, extending 19 inches below the table

- Tip: Use blue tape line on workbench and the top for easily positioning tables

- Recommended to provide wobble stools and cushions for chairs



- Our goal is to make the library a more welcoming place, so groups with disabilities who visit the makerspace have a quiet room with sensory kit option.

- We book our adjacent Board Room, with dimmable lights

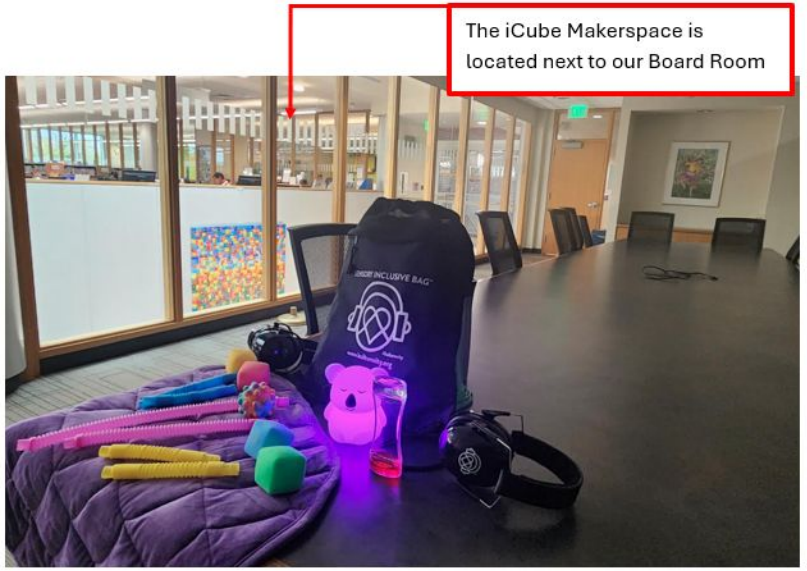
- A sensory accommodation kit with various items is available:

  -weighted lap blanket

  -fidget items, including squishy stress balls

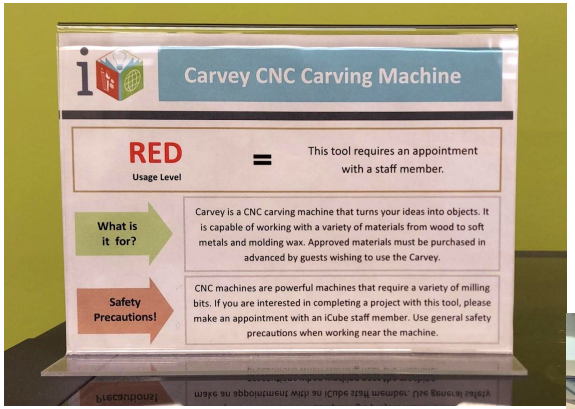
  -noise cancelling headphones

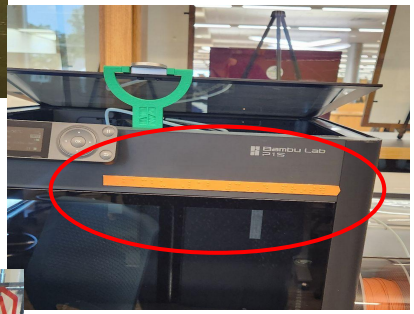
  -color-changing mindful breathing Koala



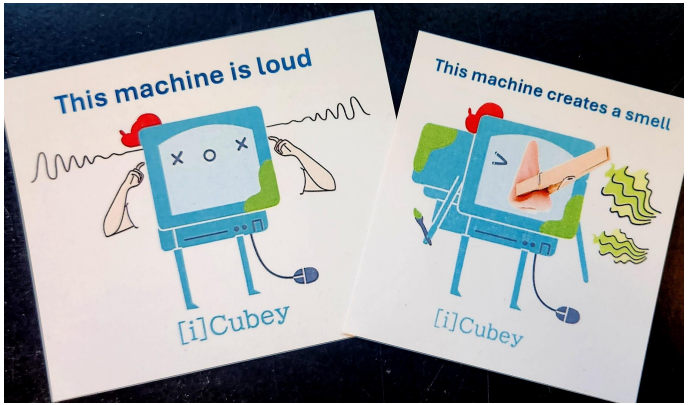
Audit - Signage

- Our room policy as well as equipment signage is small, wordy, has few pictures
  - Recommended to use simplified words and visuals
- Braille labels also recommended to help people with visual impairments identify the room and equipment
  - https://touchsee.me to generate 3D-printable Braille labels
- No signage to identify equipment that may have sensory elements to be aware of (ex. smell, loud noises)





- Picture Exchange Communication System (PECS) - Communication without speech using simplified pictures, symbols, words, photographs
  - www.mypecs.com
- Adapting the iCube's mascot, Cubey, to label equipment that makes loud noises or can get smelly during use



3D Assistive Devices Project

- Discussing accessibility initiatives with Jennifer McArdle, our colleague who manages our Universal Access Collection, lead to a no cost menu of open-source 3D-printable task-specific designs
- Request form located in 3 areas of the **novilibrary.org** website: iCube makerspace, 3D printing, and DEI webpages.
- Funded by our Friends of the Library group
- Menu consists of 10 items
- One item per month, per patron
- No residency restrictions - anyone can request one

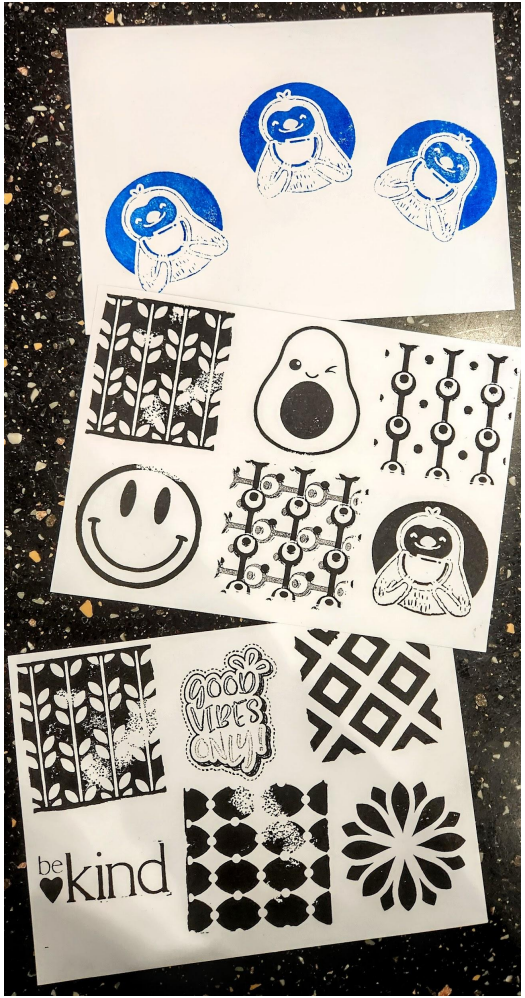
Programming with Special Needs groups

- Started with the **Novi Adult Transition Center** in collaboration with the Literacy Librarian who provided storytelling sessions and iCube staff offered making sessions. NATC is an employment skills program for 18 to 26-year-olds
- Then connected with **Novi High School's Special Education class**
  - Opportunity to be involved with makerspace, engage in fun activities using equipment and supplies
  - Allowed us to get to know the students and work with their teachers more closely
- Recently added programming with **New Horizons**, local organization that provides skills training and employment placement to adults with disabilities

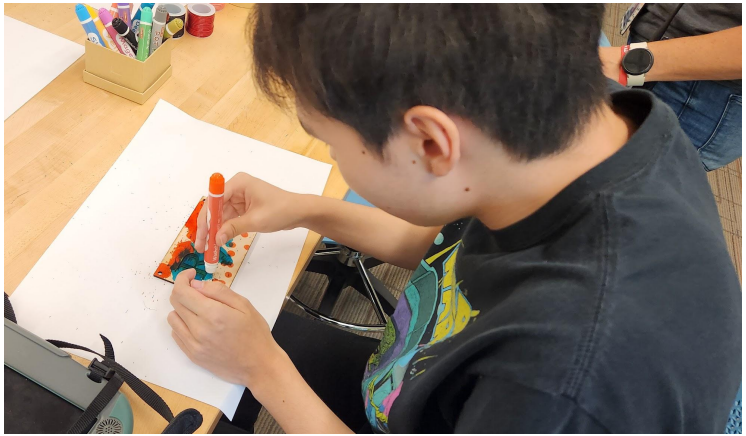
Programming examples

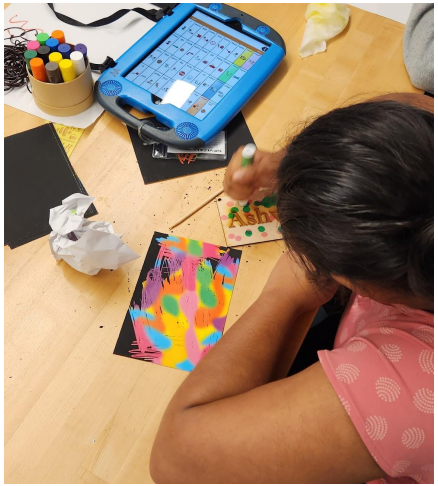
Button making (VERY popular)

Custom stamps for names or images



Dot name signs to hang on cubbies





Lessons and advice

Challenges we faced	What we did
Patrons may get overstimulated during programs or using certain equipment	Provide fidget toys or other tools for stimming, a quiet area to step away and decompress
A planned activity might flop, some patrons may be disinterested	Keep a back-up activity on standby to keep participants engaged and included
Equipment jamming or breaking can lead to frustration and heightened emotional responses	Maintain a calm and reassuring attitude while taking care of the problem, or re-route to another activity
Room furnishings like carpeting, lack of sink can make messy activities (ex. painting) harder to manage	Non-scented hand wipes make for quick and easy clean-up, along with paper towels and disinfectant wipes; supplies like paint markers and glue sticks lower the risk of spills
There might not always be a staff person around to assist with accomodations	Incorporating a “Request for Accommodation” form for the makerspace on the library’s website

Getting Started

Some accessibility suggestions to consider when setting up a makerspace:

Creative kits and art supplies:

- Art supplies and ergonomic hand tools with larger grips.
- 3D assistive devices for holding pens, markers, paint brushes.
- Adaptive scissors - ambidextrous

3D Printers: (We love Bambu printers!)

- Print assistive devices and tools
- User-friendly models
- Braille labels

Laser Cutters and Engraver: (affordable options like x-Tool and Glowforge)

- Great for making personalized projects

Workstations:

- Adjustable height tables for sitting or standing
- Accessible workbenches with space for wheelchairs

Assistive Technology: Magnifiers, voice-activated devices, adaptive keyboards and ergonomic Mice

Storage Solutions: Shelving and bins that are easily reachable for all users, including those in wheelchairs

Safety and Sensory-Friendly Gear: goggles with adjustable straps, noise cancelling headphones, calming devices for sensory needs like fidget tools, and weighted blankets

Request for Accommodations. Requests made in advance so the patron doesn't encounter stressful surprises. (of course, some can be accommodated immediately)

- Supplies laid out in an accessible manner
- Tables moved, lowered, or raised
- The room and/or equipment reserved in advance

Space and furniture

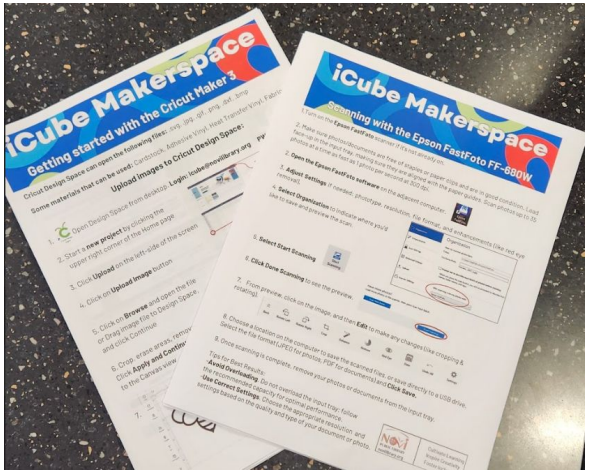
- Keep ADA guidelines in mind for tables, floor spacing
- Maintain a consistent room layout, especially equipment placement, for patrons with low vision
- If considering high-top work tables, opt for ones with adjustable height
- Provide cushions for hard chairs
- Keep a wobble stool available as an alternative to regular chairs
- If possible, provide a quiet place for patrons to go if they need to decompress

Equipment and supplies

- Makerspace 101: amenities can range from low tech (paper and markers) to high tech (CNC machine)
- Looks for tools and supplies with ergonomic design and are easier to grip
- Take stock of which equipment emits odors, loud noises, high temperatures when used
  - PECS cards can be used to label these
- 3D printers are versatile and don't need to be high-end to be effective
  - Excellent for making assistive devices and stim toys in-house
- Use safety covers and clearly labeled storage for sharp tools like Xacto knives so patrons who use their fingers to "see" won't accidentally get cut

Signage and handouts

- Signs for equipment should use simple language and clear visuals. More detailed descriptions and additional info can be included on the library website.
- Use braille labels to supplement printed signs and labels
- Post key concepts of makerspace policy in large print
- Canva and Word have accessibility checkers to make documents easier to read for patrons with visual impairments
    - Alt Text descriptions for images are important for website



Programming

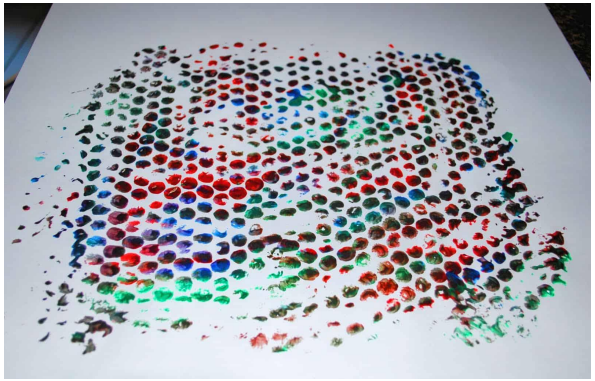
- Research and reach out to local groups and organizations to gauge interest in collaborating
  - Are any of these groups already visiting your library?
- Get to know the people in your groups; more insight into what they like, learn their limitations, and what needs they may have
  - personalized items were well-received with our groups
  - Find ways to not only provide a rich experience, but ways to assist, like the custom rubber stamp project.
- Prep project materials ahead of time
- Get explicit consent to take pictures
- Use easy to grip tools - paint markers, stamps and ink pads, glue sticks
- Include visuals of project steps
- Have a back-up plan

Accessible Programming Starter Pack

Textured art

Air-dry clay sculpting

Foam printmaking



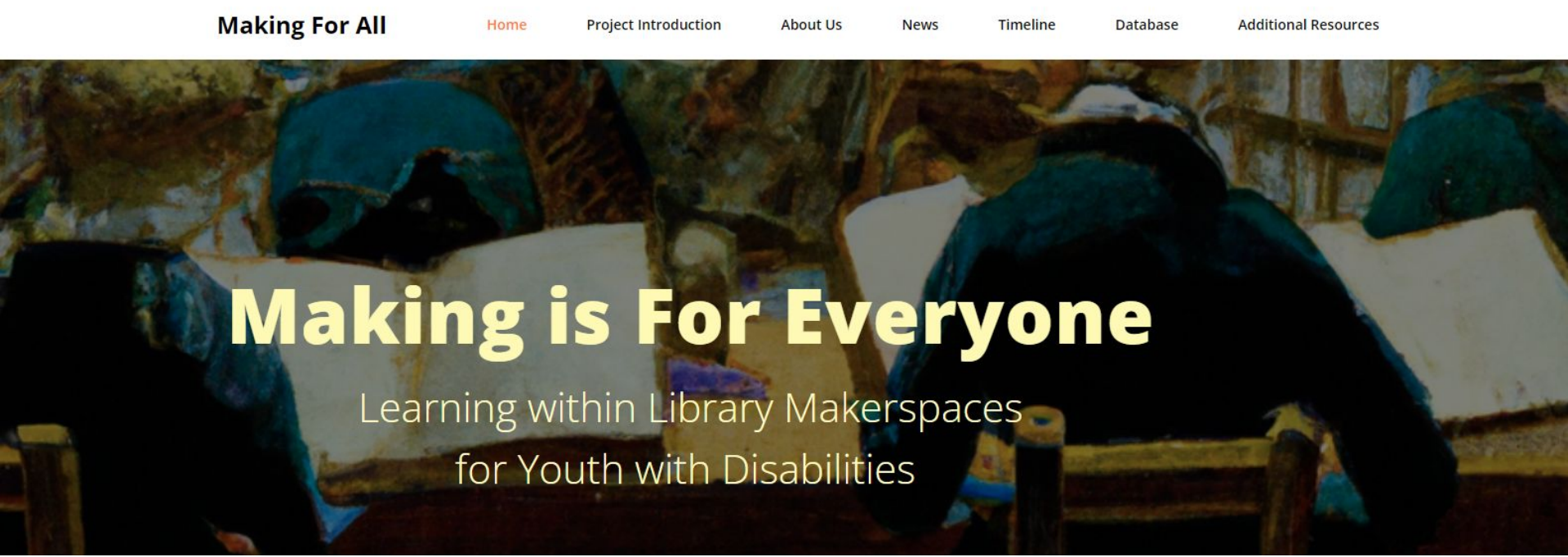
Bubble wrap art

Collaborative mural

Paper mosaic

Helpful resources

https://makingforall.oucreate.com



The *Making for All* research team from the University of Oklahoma is conducting an IMLS-funded project about public library makerspaces and maker programs for youth with disabilities. You are invited to participate in an IMLS-funded study about makerspaces for youth with disabilities. This could entail a site observation and/or an interview.

Assistive Devices

1. **Makers Making Change - https://www.makersmakingchange.com/s/**
   This Canadian program connects people with disabilities to volunteers who can build affordable assistive technology

2. **CreATe Together - https://techowlpa.org/maker-catalog/**
   CreATe Together is a free program in Pennsylvania that provides 3D printed assistive technology to people in need

3. **3Duniverse** - **https://shop3duniverse.com/blogs/digital-fabrication-in-education/help-3d-print-assistive-technology-devices-to-improve-the-lives-of-others**

   The Illinois Assistive Technology Program team provides a number of open-source assistive technology designs that can be 3D printed without the need for customization.

4. **Disability Lab - http://disabilitylab.com/disabilitylabprojects.html**
   Disability Lab provides design and manufacturing to the disability community. Illustrates their design process from start to finish, and provides devices and tool kits for purchase on Etsy and Ebay.

Assistive Devices - 3D printing files

Always check for the latest designs and adaptations in the community to find the best solutions. Here are some websites where you can find open-source assistive technology 3D-printable designs for task-specific tools:

Search terms: accessible, adaptive, assistive, disabled, disability, sensory

- thingiverse.com
  A large repository of user-uploaded 3D models, including various assistive devices
- myminifactory.com
  A platform for sharing and discovering 3D printable designs, including assistive tools
- cults3d.com
  Offers a variety of 3D models, with a section dedicated to accessibility and assistive technologies
- pinshape.com
  A community-driven platform where users can share and find 3D printable designs

Assistive technology tools that can be 3D printed

1. **Adaptive Utensils** - Designs that can be adapted for individuals with limited hand mobility.
    - Modified Forks/Spoons
    - Drinking Straw holder
2. **Reading and Writing Aids** - Various designs for better control when writing, drawing, and a comfortable reading experience.
    - Pencil Grips
    - Adaptive Writing Tools
    - Holder for keeping book pages open
3. **Large Zipper Pulls** - Extended pulls for easier manipulation of zippers
4. **Buttons Hooks** - Tools that help in fastening buttons with limited dexterity

4. **Vision Aids:**
    - **Text Holders** - Stands that keep books or papers at an optimal reading angle
5. **Sensory Toys:**
    - **Fidget Tools:** Designs for sensory stimulation, helping with focus and relaxation
6. **Wheelchair Accessories:**
    - Cup Holders: Customizable cup holders that attach to wheelchairs
    - Storage Hooks: Hooks designed for easy access to personal items
    - Mounted dog treat dispenser: Mounted to wheelchair, allows people with limited hand mobility to easily reward their assistance dogs for good behavior. Can also simultaneously actuate a handheld clicker, making it possible to employ the “clicker method” of dog training used by many organizations.

Further Reading

- Federal website for the Americans with Disabilities Act
  https://www.ada.gov/
- Accessible Making: Designing a Makerspace for accessibility
  https://files.eric.ed.gov/fulltext/EJ1259106.pdf
- How makerspaces can be accessible to people with disabilities
  https://www.washington.edu/news/2015/08/05/how-makerspaces-can-be-accessible-to-people-with-disabilities/
- How 3D Printing is Transforming Lives for People with MS
  https://www.msfitnesschallenge.org/how-3d-printing-is-transforming-lives-for-people-with-ms/
- Using 3D Printing for People with Disabilities
  https://www.elderadvisorygroup.com/3d-printing-accessibility/

Thanks for attending!

Questions? Feel free to reach out to:

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