



# Academic and public library makerspaces' online services and programs during and post-COVID

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- Jung, Y. J., Kim, S. H., & Choi, G. W. (in review). Revisiting design principles and guidelines for online makerspace services and programming in public libraries.
- Kim, S. H., Jung, Y. J., & Choi, G. W. (2023). Public and academic library makerspaces' transition from physical to online settings during a pandemic. *The Library Quarterly*, 93(2), 127-240. <https://doi-org.ezproxy.lib.ou.edu/10.1086/723848>
- Kim, S. H., Choi, G. W., & Jung, Y. J. (2020). Design principles for transforming making programs into online settings at public libraries. *Information and Learning Sciences*. 121(7/8), 619-630. doi: 10.1108/ILS-04-2020-0110

# Makerspaces

- Informal educational sites for tinkering and production related to science, technology, engineering, and mathematics (STEM) and art (Halverson and Sheridan 2014)
- Makerspaces have been widely adopted in libraries (IMLS 2014)
- In public libraries, maker services and programming support knowledge creation and community engagement (Moorefield-Lang 2015a; Willett 2016)
- Academic library makerspaces have taken a leadership role in championing experiential learning through the integration of maker services with the use of physical and digital technologies in undergraduate and graduate programs to support students, faculty, and staff (Nagle 2021)

# Makerspaces in online settings

- Before COVID-19: Some online communities for makers (not necessarily bounded in library makerspaces); some library makerspaces run online channels (e.g., website, SNS).
- However, the prolonged pandemic required library makerspaces to adapt to the remote mode of service **quickly** (Bakija, 2020; Burg & Kirtman, 2022; Giles & Willerth, 202)
- Lack of support and guidelines (and time!)

# Research questions

- What were the **initial responses** of academic and public library makerspaces right after the COVID-19 outbreak?
- How did the makerspaces make changes in services and programs as **the pandemic continued**?
- What challenges did library makerspace staff experience?
- What approaches did library makerspace staff consider when designing and implementing online maker programs?

# Data collection and analysis

- Qualitative collective case study (Stake, 1995)
- Zoom interview with 11 library makerspace professionals (from 5 public and 5 academic libraries) – 60-90 min each
- Thematic analysis based on the grounded theory approach (Creswell, 2013)
- Initial codebook → each researcher coded 30% of the data → codebook was reviewed and refined into four categories (challenges, considerations, approaches, and outcome) → coding and discussion until full agreement was achieved

# Codebook categories

- Challenges
  - Logistic challenges
  - Lack of staff and training
  - Facilitation of online interactions
  - Social issues
  - Substitution of online activities
  - Online marketing and program assessment
- Considerations
  - Patrons' needs and interests
  - Cost/simple materials
  - Standards
  - Time
  - Other
- Approaches
  - High-level strategies
  - Soft skills
  - Training/support
  - Examples of change
- Outcomes
  - Increased level of accessibility
  - Development of new program ideas and guidelines
  - Learning new skills
  - Change in perceptions toward online maker programming

# Initial responses (in Spring 2020)

- Frustration and emotional distress
  - “Everyone felt really helpless. I think that’s probably an emotion you’re going to hear a lot across everyone that you talk to” (Lacy, public)
- Helping communities by creating face shields and masks
- Setting up technology and purchasing additional tools and access (e.g., Zoom, Microsoft Teams) (more in public than academic)
- Offering existing programs in online



# After the initial responses (from Summer 2020 throughout Spring 2021)

- Introducing new programming with improvements
  - Adding captions to all videos
  - Reexamining software and checking accessibility
  - Providing online content and guidelines
  - Forming working groups and partnerships

“We really started looking at connecting with the folks who oversee, like new student orientation and a lot of the residential life experience . . . to work on developing like virtual campus tours with integrated informational stops.” (Trisha, academic)

# After the initial responses (from Summer 2020 throughout Spring 2021)

- Academic library makerspaces
  - offered virtual tours of the campus and asynchronous video recordings for workshops (digital fabrication, arts and design, knitting, etc.) -- through existing websites
  - Changed the service model to help students prepare digital files for 3D printers and they take responsibility for running those files on the machine

# After the initial responses (from Summer 2020 throughout Spring 2021)

- Public library makerspaces
  - More monthly, weekly hangouts and sessions
  - Take-home kits (expanded to include various craft materials and tools)
  - Online Fab lab certification program
  - Working groups to produce guidelines for library systems

# Challenges – logistic challenges

- Unexpecting issues when accessing digital files from a file-hosting services
- Challenging to receive previously rented makerspace equipment from students
- Setting up home offices

# Challenges – lack of staff and training

- A limited number of staff
- Hard to establish contingency plans when staff members became ill

# Challenges – with substituting online activities

- Translating hands-on physical making experience into online
- Hard to substitute when activities required fine motor skills or abstract visualization or material structures
- “You know, like if you’re going to teach somebody how to do something like sewing, something like fine detail, you need to be able to look at it up close.” (Stacy, academic)

# Challenges – facilitation online interactions

- (particularly more evidence in public libraries)
- Difficulty in promoting active engagement and reproducing the deep level of social presence
- Hard to sense nonverbal cues (participants turned off the camera)

# Challenges – social issues and online assessment

- Difficult to provide constructive feedback
- Zoom fatigue
- Hard to assess the impact of online programs
- But academic library makerspaces – relatively fewer reports about challenges with online marketing and program assessment



# Helpful resources

- Existing knowledge from extensive programming experiences
- Technology infrastructure and staff with technology expertise
- different university-based organizations with expertise
  - “There are instructional designers that work in information technology that we can ask if we need support, or we have our library technology services department that we can ask about like hosting solutions. . . . And we also have the Center for Teaching and Learning.” (Trisha, academic)
- Intra- and inter-organizational support and collaboration

# Programming considerations

- Introduced bite-size, shorter-duration videos (to mitigate Zoom fatigue)
- Programs using simple and low-tech materials – considering library budget and patrons' cost burden
- CDC standards and library protocols
- Accessibility and sustainability

# Outcome

- Increased accessibility
- Flexibility to invite outside experts (in geographic distance)
  - “We have guest speakers . . . they’re very, very busy people . . . It saves them a trip across campus . . . by being able to present via Zoom.” (Evan, academic)
- New skills for future programming such as facilitation, technical skills
  - “But online it’s much harder. . . . Proper online learning takes a lot of thought. . . . It inspired me a little to shake it up a little bit.” (Stacy, academic)

# Outcome

- Perception change about online learning and making
  - “This has shown us we could do a lot online. Like I did not think that I could do a job as like basically makerspace librarian online.”  
(Stacy, academic)
- Thinking of new hybrid models for 3D printing, maker kits, etc.
- Shift in community members’ conceptualizations of libraries from a place to access traditional print materials to a place to access tools, ideas, expertise, and learning
- But, some equity gaps were exacerbated

# Design principles and guidelines for online makerspace services and programs

1. Program and service design
2. Tools and materials
3. Facilitation
4. Logistic support

Any sparking thoughts for online  
makerspace services or programs?!

Thank you!!

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