

“Making a Way Out of no Way”

Women’s Making Practices in a Public Library Makerspace

Rebecca M. Teasdale, Department of Educational Psychology, College of Education, University of Illinois at Urbana-Champaign

INTRODUCTION

Makerspaces are shared workspaces for creating tangible objects, exploring ideas, and developing skills (Sheridan et al., 2014).

Although makerspaces are touted as forces for democratizing digital fabrication (Blikstein, 2013), **women** remain **marginalized** in the maker movement (Bean et al., 2015; Intel, 2014).

Public library makerspaces may be well-positioned to engage women: the majority of U.S. women visit public libraries (Horrigan, 2016), library makerspaces aim to foster broad community access (Halverson, et al., 2017), and community members perceive libraries as resources for technology learning (Horrigan, 2016).

The current study seeks to inform the design of makerspaces that attend to **gender equity** by exploring the experiences of African American and White women in one public library makerspace.

CONTEXT

The **public library** at the center of the study operated 28 locations across a city in the US Rust Belt and was explicitly positioned to address issues of **educational** and **economic equity**.

| City Demographics | |
|---------------------------------|----------|
| Population | 385,500 |
| Median household income | \$28,000 |
| Adults with bachelor’s degree | 16% |
| Race | |
| African American | 51% |
| White | 40% |
| Asian | 2% |
| American Indian, Alaskan Native | 1% |
| Two or more races | 4% |
| Ethnicity | |
| Hispanic or Latino | 11% |

U.S. Census Bureau, 2017

The makerspace provided **open access** for **adults** to engage in **open-ended, self-directed, technology-rich** making, using:

- Graphic and computer-aided design software
- Laser cutters/engravers
- Vinyl printers/cutters
- 3D printers

FRAMING, QUESTIONS & METHODS

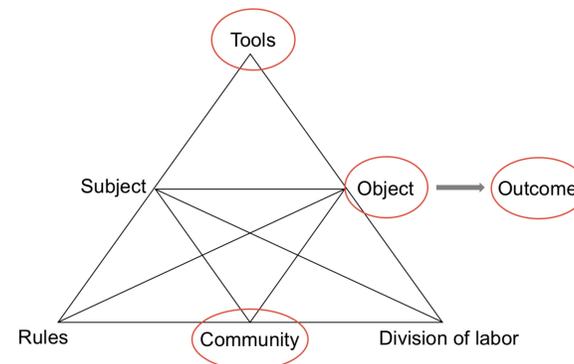
Drawing on Calabrese Barton and Tan’s (2018; Calabrese Barton, et al., 2017) conceptualization of equitably consequential making, the study asked:

1. In what ways do women leverage the makerspace to engage in personally **meaningful** and **consequential** making?
2. How do the makerspace’s sociomaterial resources **support** and/or **constrain** women’s learning and engagement?

A **case study** design was adopted (Stake, 1995), drawing primarily on semi-structured **interviews** with **women** engaged in the makerspace and supplemented by non-participant observations and interviews with makerspace staff and leaders.

| Sample of Women Makers | | |
|------------------------|-------------|---------------------|
| Race | Age (Years) | Education |
| African American | 18-24 | High school diploma |
| African American | 25-34 | High school diploma |
| African American | 25-34 | Associate degree |
| African American | 25-34 | Associate degree |
| African American | 45-54 | Graduate degree |
| African American | 55-64 | Associate degree |
| White | 18-24 | Bachelor’s degree |
| White | 25-34 | Associate degree |
| White | 45-54 | Graduate degree |

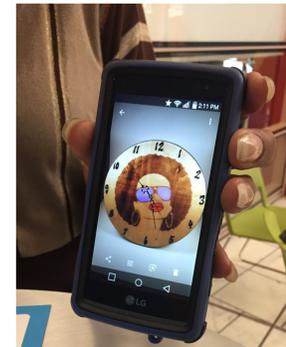
Data collection and analysis were guided by third-generation **activity theory** (Engeström, 1987, 1999) and focused on respondents’ immediate goals (**objects**), larger motivations and desired benefits (**outcomes**), learning arrangements and resources that supported/ constrained engagement (**tools, community**), and **interaction** with other activity systems.



Adapted from Engeström, 1987, p. 78

RESULTS

Respondents **integrated** digital fabrication technologies into their existing, often lifelong, **creative practices**.



I think I've been attracted to using the technologies and the equipment that fit in spaces that I already live in. [...] I'm not sure I see a huge difference between the vinyl cutters and appliqué...it's the same principles of shape, color, and then how the layers can create the designs.

Many respondents used the makerspace to create artifacts they offered **for sale** at craft fairs or online. They described making as a means to generate income and, for some, to “*make a way out of no way.*”

For me, I'm a single mom. I struggle. I don't have the start up capital, I don't have the credit to go start a big business. But this is something that has provided me with small amounts of extra income.

I can actually make money off things like this. And my little cousins...they can look up and...be like, "She did it. She made it out. The odds were against her, but she still made it out."

Respondents **organized** their **learning** around specific projects they valued—leveraging extensive **one-to-one assistance** along with demonstrations, handouts, videos, and trial and error to master necessary software and equipment.

I was really nervous because I tend to break technology. I'm really bad with computers and everything. [...] But the staff were really helpful. They walked me through all the steps. And whenever there was an issue, they knew how to fix them right away.

Respondents described the makerspace community as **welcoming** and **inclusive**, an important affordance for their engagement.

I like that this is a space where everyone can go and is welcome. I've never felt like this is only for certain people.

The intentional inclusivity of the makerspace also gave rise to a key tension, as it required respondents to navigate **conflicting values**—such as balancing the perspectives of hobbyists with those of entrepreneurs—and conform with rules designed to balance competing needs.

DISCUSSION

Respondents pushed the boundaries of **what counts as making** and STEM and challenged **gendered distinctions** between crafting and technology practices (Buchholz, et al., 2014; Calabrese Barton et al., 2017).

In a context of limited employment opportunities, respondents leveraged the makerspace to support **economic survival** and **thriving** through creative-sector micro-entrepreneurship.

Respondents orchestrated **learning pathways** shaped by personal preferences and makerspace affordances and constraints (Azevedo, 2011).

The library’s **just-in-time instructional resources** offered an alternative to the “extreme autodidacticism” of hacker-inspired makerspaces and the workshop-style instruction of many makerspaces in informal learning contexts (Blikstein & Worsley, 2016, p.66)

The **broadly inclusive** space welcomed a wide range of making practices and required rules and strategies for **balancing** the **needs** and values of a broad cross-section of makers.

CONCLUSIONS

Though often framed in terms of academic or career STEM pathways, technology-rich making was leveraged by women in this study to further valued creative practices and foster economic survival and thriving. Thus, making contributed to “**lives empowered by STEM** literacy, knowledge, and identity” (CAISE, 2018, p. 2).

Activities were supported by flexible, just-in-time **instructional resources**, especially one-to-one assistance, and a **broad definition** of what counted as making and who counted as a maker.

CITATIONS & ACKNOWLEDGEMENT

A complete list of references and a download of the poster are available at RebeccaTeasdale.com/AERA2019.

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