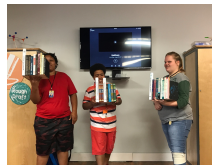
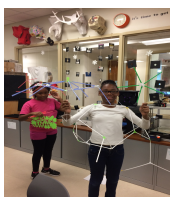
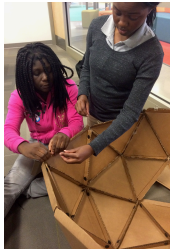


# Research in Service to Practice: Equitably Consequential Making among Youth from Historically Marginalized Communities

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In partnership with Boys & Girls Clubs of Lansing & Greensboro, Impression 5 Science Center & Center for New North Carolinians



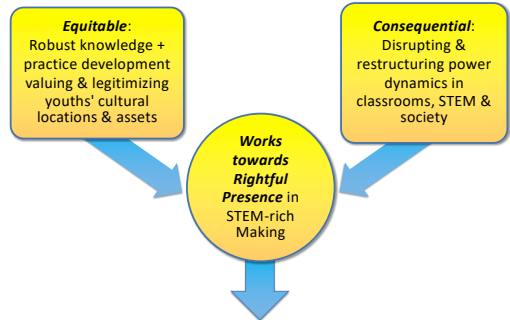
## Objectives

In Research + Practice Partnerships with 4 makerspaces in 2 cities, we pursue equity-oriented STEM-rich making with youth from historically underrepresented backgrounds, particularly BIPOC youth and youth in refugee & low-income communities, towards developing:

- a theory-based and data-driven framework for equitably consequential making
- a set of individual-level and program-level cases with exemplars of equitably consequential making (and the associated challenges) that can be used by researchers and practitioners for guiding the field
- an initial set of guiding principles (with indicators) for equitably consequential making in practice.

We seek to build capacity among STEM-oriented maker practitioners, researchers and youth to expand prevailing norms of making towards more transformative outcomes for youth.

## Equitable & Consequential Learning & Engagement



**Informed by Critical Justice & Mobilities of Learning**

- **Movement:** Ideas, resources, tools through space & time
- **Geometries of power:** Intersectional injustices & dynamic alliances
- **Place & Place-making:** Social, political & material construction across scales of activity
- **Presence:** Authoring rightful presence through hybrid & contentious practices

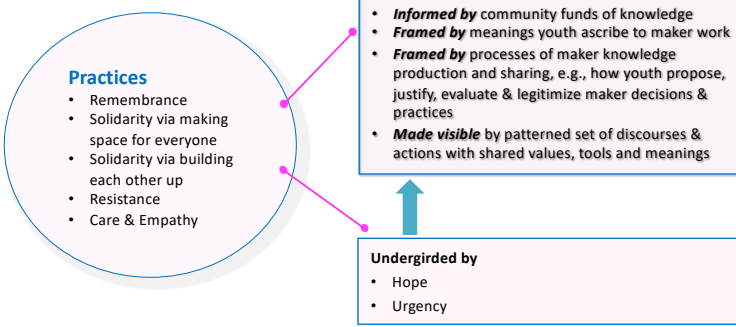
## Justice-oriented Culture of Co-Making: Design Heuristic

Dimension	Indicators
<b>Critical Co-Learning</b>	<ul style="list-style-type: none"> <li>• What is learned, how, and with whom</li> <li>• Takes into consideration the wide terrain of expertise and epistemologies that matter to youths' reasons for making, in all its possible layers and complexities</li> </ul>
<b>Border Work</b>	<ul style="list-style-type: none"> <li>• Real &amp; imagined geographies of making</li> <li>• Involves making visible borders on which youth are positioned, brought into proximity with STEM borders</li> </ul>
<b>Enacting Solidarity</b>	<ul style="list-style-type: none"> <li>• Relationalities of making involving people, STEM and communities</li> <li>• Positions adult mentors as allies committed to be with youth across space/time, learning alongside youth around issues of injustice as impetus to engage in co-making</li> </ul>
<b>Futuring</b>	<ul style="list-style-type: none"> <li>• Making as a sociopolitical project</li> <li>• Requires an eye toward transformations of social-spatial realities in the longer term as a necessary co-making outcome</li> </ul>

## Cultural/Community Epistemic Practices towards STEM-rich Making

In community-based making spaces, we observe culturally-based epistemic practices as integral to STEM maker work (hooks, 2009; Fairfax, 2017). These practices, when supported pedagogically by maker mentors:

- enrich & transform STEM knowledge/practice,
- support multiple iterations of design, and
- nurture youths' identities as community STEM-makers.



## Massaging Slipper

- Re-purposed sole from used Timberland boot
- Hot glue crisscross pattern for massaging effect
- Pager motor for vibration
- Floral print material cover for beauty
- Wires, battery, soldering metal

*"I want to give it to the homeless and put a motor on the bottom, so when they put it on, they could massage their feet with it. They could just kick back, and just relax. Then they can just massage their feet from walkin' all day."*

**Su'Zanne:** My slipper says I'm an intelligent woman. I care. I make things to help people who need help cause they can't get something they need or they have a problem.



## #StopRacism

- Recycled poster board, double plied with hot glue for durability.
- 40 LEDs, connected by a hidden parallel circuit powered
- hand crank generator and back up batteries

Nila made her #StopRacism sign, over many iterations, in response to her own and her peers experiences with racism. The hashtag shows people that their experiences were linked to a larger narrative, and the lighting around the double ply board so that her sign would be visible and durable. Her sign holds a prominent place in her makerspace, and is used by other peers when they want to open dialogue on racism, when they are looking for help in how to put together a complex circuit, and when they want to point out to others how much their maker work matters.



**Nila:** "It is important to address racism because of who is the president. ... This sign could grab people's attention, like the political and rentals signs posted in front yards and along the street. My goal is to stop it (racism) out."

## Equitable & Consequential Making in Community

Incorporate tools & approaches that centralize & elevate community epistemologies

- Tools that solicit & leverage upon insider ethnographic knowledge & practice, e.g., interviews, surveys
- Tools that support iterative engagement in design-making in tandem with community epistemologies, e.g., Community feedback cycles, Youth-led community workshops, etc.

Create spaces for project "afterlife" as part of local maker culture

- Role of projects in maker clubs and community settings: incorporating projects & narratives into maker discourse/culture
- Maker projects as launching points for new projects

Supporting new models of making (co-making & justice-oriented)

- Incorporate into maker discourse: Whom, using what resources, towards what ends
- Critically evaluate what makes makerspace boundaries porous or not

Frame the objects of maker learning along three interacting scales:

- STEM/maker knowledge and practice (including hybrid forms)
- Maker projects themselves
- Shifts in discourses/practices which elevate community voices, including incorporation of community epistemologies

Participatory methodologies for maker teaching, learning, sharing, and research