



Research in Service to Practice: Critical, Connected Co-Making with Youth, Families and Communities (C3)

Edna Tan¹, Angela Calabrese Barton², Day Greenberg², Ti'Era Worsley¹, Carmen Turner³, Grace Thompson⁴, Diya Abdo⁵
 University of North Carolina at Greensboro¹, University of Michigan², Boys and Girls Club, Lansing, MI³, Boys and Girls Club, Greensboro, NC⁴,
 Center for New North Carolinians⁵

Our overarching goal is to better understand the particulars of how and why youth co-make in life-based and STEM-rich ways with families and communities, such that we can better infrastructure community-based maker programs in support of youth learning and well-being.



My GG, she's a diabetic, and so she sweats a lot. At church, she'll be like, 'Jazmin, go back there and get me two fans'" She has done this while singing! She'll be up there in the choir singing and then be like [arm motions] flagging me to go get the fans ... So I'm like, if I just get this [motorized fan], I wanted it to make it a necklace. . . It took me a long time. I had to first get a motor, which I got from [my maker club]. And I kept trying different ways to make the blade. Maria [maker mentor] helped me test out a few different designs for the blades. I used so many different materials from home, the club, even some plastic flaps I got at school. . . *Then when it worked, I started teaching everyone else at [the maker club] how to make their own. I also brought instructions I wrote up to school to see if we could make them in my science class.* – Jasmyn, 16, Black youth

Intellectual Merit

- Develop new empirical understandings of youths' family and community-based STEM-rich co-making practices, including the community resources youth leverage towards such co-making, how and why
- Identify the nodes of connectors, movements and directionalities among community and STEM resources, towards youths' and families' STEM-rich maker learning
- Develop and implement proof-of-concept infrastructuring practices at four, community-based STEM-rich maker clubs, in support of bridging youths' life-based making with maker education programs.

Making & Justice, Community-focused RPPs

- Culture of Co-Making (Gutiérrez & Rogoff, 2003; Calabrese Barton & Tan, 2018)
- Consequential Learning towards a Rightful Presence in STEM-rich Making (Calabrese Barton & Tan, 2020)
- Sustained Research + Practice Partnerships: RPPs in four contexts

Broader Impact

To transform maker culture so that it is inclusive, methodologies that will amplify youth and practitioner voices to become a part of and to drive dialogue on equity-minded making.

Research Questions

Study 1 Research Question: How, what, when, where, why and for whom do youth co-make in life-based and STEM-rich ways with family in home and community contexts? Through such life-based co-making, what kinds of learning result?

Study 2 Research Question: As youth co-make with families and others in community contexts, what kinds of infrastructuring do youth leverage or actively create in support of their efforts to co-make in STEM-rich ways? How are youths' infrastructuring efforts towards STEM-rich co-making solidified and codified within and across families and communities towards greater opportunities to make?

Study 3 Research Question: How do these infrastructuring needs/efforts map onto (or not) community-based STEM-rich maker programs? How might community-based STEM-rich maker programs integrate particular infrastructuring practices to connect and cross-leverage resources between STEM maker programs and families?

