YOUTH GOT THE POWER: BUILDING YOUTH-ADULT PARTNERSHIPS FOR CLIMATE ACTION

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ABSTRACT

YOUTH GOT THE POWER: BUILDING YOUTH-ADULT PARTNERSHIPS FOR CLIMATE ACTION

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Global anthropogenic climate change is an urgent environmental, public health, and social justice issue that disproportionately impacts vulnerable populations including children and youth[1] (Dimitrov, 2010; Intergovernmental Panel on Climate Change, 2021). Despite recent involvement in climate action on the national and international stage (Boulianne et al., 2020; Peek, 2008; Yona et al., 2020), youth continue to be underutilized as key stakeholders in developing and implementing climate solutions (Trott, 2019a), which is a form of adultism (DeJong & Love, 2018). Schuster & Timmermans (2017) discuss the need for more research examining adults and the roles they play in engaging youth in research. Thus, the purpose of this study was to explore how adults and youth can work together to take climate action within the context of non-formal Climate Change Education. Using a Youth Participatory Action Research methodology coupled with bricolage (Rogers, 2012), this study was conducted for, with and by a subset of youth who previously participated in a teen climate ambassador program. During virtual groupwork sessions, youth and I participated in a collaborative planning process to design a climate action project. Since youth should ideally be involved in designing and conducting

[1] For the purpose of this study, youth are defined as individuals between the ages of 15 and 24 (United Nations, n.d.).

research in a YPAR study (London et al., 2003), we worked together to define, enact, and understand research through the context of climate action project planning. Many different forms of data (i.e., group discussion, collaborative notes, art, poetry) emerged throughout the study, which were co-analyzed with youth and woven together using a bricolage format. Results examine power dynamics, collaborative process, and how youth and I each embodied the roles of participant and researcher within the context of a YPAR. This study has particularly relevant implications for adults partnering with youth to take community action.

CHAPTER 1: INTRODUCTION

On an unseasonably cold and blustery day in March, my thirteen-year-old self shuffled nervously around a newly erected gallery space at a local nature preserve. I had just spent the past few months working with students at my old elementary school to create art pieces highlighting different invasive and endangered species which we planned to publicly display. As a middle schooler, most adults I asked about hosting the gallery dismissed me without a second thought. "There's no way this girl has anything interesting or worthwhile to display," I imagined them saying after I left the room.

Despite my initial roadblocks, the gallery happened (with my dad's help) and was a success. One of the attendees worked for a regional magazine and I ended up getting interviewed for a feature piece about young naturalists. Several of the student artists came too and were able to talk about their pieces to other visitors.

When I was in middle school, I attended an environmental-education focused charter school where we completed year-long action projects in 8th grade. After this first experience completing an action project described above, I participated in several community-based service projects through my church and with my sports teams in high school and college. Eventually, I started mentoring youth in designing their own projects in various positions as an environmental educator. I hear echoes of the same challenges, joys, frustrations and successes that I encountered within many of the youth I have worked with over the years. Regardless of topic or scope, most young people doing action projects must interact with adults during some part of the process, whether it involves asking for permission, assistance, support, or additional resources. I have troubleshot with youth as they experienced their entire project getting shut down because they did not notify the necessary adults soon enough, the topic was "too controversial" or

unrelated to program goals, or adults simply did not think the project was worthwhile. I've also both witnessed and participated in the tokenization/exploitation of youth action projects, where adults dictate the terms and execution of a project for their own benefit while framing it as a "youth-led" experience.

When adults put up barriers to youth addressing issues that impact them, young people often still find ways to accomplish their goals, albeit without the support that might have made it easier. This reality exists so clearly in the climate change space. Youth-led climate action has taken center stage while world leaders refuse to listen, acknowledge, or collaborate with them. What would it look like if, instead, those adults decided to take the concerns of young people seriously, not because we pitied them, but because we saw that our own future and well-being was threatened, too?

The Climate Crisis

Anthropogenic climate change is arguably the most important issue facing the world today (Dimitrov, 2010; Intergovernmental Panel on Climate Change, 2021; McCright et al., 2013). Climate change encompasses many global threats to human and ecological health such as food and water insecurity, environmental injustice, natural disasters, sea level rise, extreme heat, and disease (Intergovernmental Panel on Climate Change, 2021). Because of these climate threats, there is a growing need to take personal and collective action to combat climate change at local, regional, national, and global scales (Schriener et al., 2004). This is particularly important for youth, who will inherit the climate issues caused by previous generations and deal with the consequences of these widespread impacts throughout their lifetime.

Non-formal Climate Change Education

Non-formal Climate Change Education (CCE), which takes place during out-of-school time, focuses on climate science as well as the broader social context of how to make an impact. Krasny et al. (2015) suggest that non-formal climate change educators can therefore play an important role in bridging climate literacy with climate action through focusing on topics such as advocacy and civic engagement, environmental justice, and collective vs. individual action. Since non-formal CCE is an established field where youth and adults may already be exploring climate solutions (or could easily incorporate this into their programs) this makes it an ideal setting for exploring how youth and adults can partner for climate action.

YES-Resilience Program Background

The Youth Engaging in the Science of Resilience (YES-Resilience) program was a 10-month STEM enrichment program for 9th-12th grade students with a focus on students underrepresented in the sciences (i.e. racial minorities, women, and rural youth) to explore local climate impacts, investigate climate resilient solutions, and design a resilience-building action project (University of North Carolina-Institute for the Environment, n.d.). This program was funded through a National Science Foundation grant partnership between the North Carolina Museum of Natural Sciences and the University of North Carolina Institute for the Environment. There were around 30 active participants from the Raleigh (primarily urban) and Whiteville (primarily rural) regions of North Carolina who met virtually twice per month. I acted as one of two lead educators for this program and remain part of the education team. While the YES-Resilience program officially ended June 30th, 2021, a grant extension has allowed staff to continue piloting lessons with high school students and educators, develop five curriculum modules to be shared with other non-formal Environmental Education centers in North Carolina, and present about this program at regional and national conferences.

The Research Study

The purpose of this study is to explore how adults and youth can form partnerships to take action on complex issues such as climate change. This study employed the use of Youth Participatory Action Research (YPAR) methodology to engage former students in the YES-Resilience program in a collaborative climate action project planning process. Together we attempted to answer the question: what are youth and adult experiences of the YPAR research process while co-creating a climate action project?

Since this study took place in a non-formal climate change education setting, I begin Chapter Two by defining climate change education and reviewing relevant literature related to this field with particular attention to evoking youth climate action. I also review literature related to youth participation and youth-adult partnerships to center my study within a collaborative group framework. In Chapter Three, I outline the Youth Participatory Action Research methodology, my research methods (which include groupwork sessions and reflexive journaling) and how I employed the use of bricolage to analyze the data. Immediately following Chapter Three is a full-length journal manuscript which includes the results of the study.

CHAPTER 2: LITERATURE REVIEW

Xiye Bastida is a lead organizer for the Fridays for Future youth climate strike movement. Starting with the environmental club at her high school in New York City, Bastida mobilized school walkouts, planned climate strikes, and eventually attended the United Nations Climate Summit alongside Swedish climate activist Greta Thunberg (Bastida, 2020). Bastida is just one among millions of young people across the globe who see the impact the climate crisis is already having on their lives. These youth are calling for policy change, political action, and scaled climate solutions (Boulianne et al., 2020; Bownman, 2020). However, despite recent international involvement in climate action, youth continue to be an underrepresented group in helping to create climate solutions, which involve policymakers, government workers, urban and rural planners, educators and even family members (Boulianne et al., 2020; Trott, 2019a). A form of *adultism* (DeJong & Love, 2018), youth are discriminated against due to factors such as age, perceived inability to conceptualize complex problems, and their heightened vulnerability to climate hazards (Trott, 2019b). Additionally, youth are continuously valued by adults as the people they will become in the future rather than for the present contributions they can make, compounding factors of adultism (White et al., 2017). Nevertheless, young people are creative communicators, problem solvers, and experts of their own lived experience, making them vital stakeholders and leaders in their communities (Jones et al., 2015; United Nations, 2021). Youth also play an essential role in educating peers and family about climate change (Cherry, 2011). Increased attention to studying young people's involvement in environmental movements since the 1990's has helped expose the depth and breadth of youth's commitment to, investment in and knowledge about issues that impact their communities and lives (Bowman, 2020; Hart, 1994) .

While existing literature examines youth climate literacy rates (Schriener et al., 2005), barriers to climate education (Brownlee et al., 2012; Gifford, 2011), and what factors lead to climate action or inaction among youth (Norgaard, 2011; Ojala, 2016) few studies explore how adults and youth can work *together* to address local climate issues within the context of Climate Change Education. Since Climate Change Education (CCE) is an established field where youth and adults may already be exploring climate solutions, this makes it an ideal setting for exploring how youth and adults can partner for climate action.

Climate Change Education

CCE can be most broadly defined as education about the human causes of earth's changing climate (McKeown & Hopkins, 2010). CCE is a relatively new field, emerging in the 1990's with roots in the environmental education and Science, Technology, Engineering and Mathematics (STEM) disciplines (Hung, 2014; McKeown & Hopkins, 2010). More specifically, CCE encompasses teaching climate science, exploring specific climate change impacts to the environment (including humans) and investigating climate solutions like carbon mitigation and adaptation strategies (Anderson, 2013). However, climate change is more than just a complex scientific issue; it is a phenomenon caused by human activity that is negatively impacting the livelihoods of all life on earth (International Panel on Climate Change, 2021). Thus, climate change is as much a social, economic and environmental issue as a scientific issue (Trott, 2019a). In response, global organizations such as the U.N. are calling for a shift in CCE from "learning to know" to "learning to do" (Vaughter, 2016, p. 2), linking scientific understanding of climate change to taking action for social change (McKeown & Hopkins, 2010; Stevenson et al., 2017). This type of CCE education is especially needed given that in a recent review of CCE approaches, Monroe et al. (2017) found that there was an overemphasis on science/ facts-based

curriculum that left out important social and action-oriented dimensions. Both climate literacy and climate action, and especially climate literacy that leads to climate action, are important goals present in the youth CCE literature and will be explored at length throughout this chapter.

Climate Literacy

The United States Global Change Research Program (2009) defines climate literacy as understanding the reciprocal relationship between society and climate change. Individuals who are climate literate know how to effectively communicate climate science, understand the essential principles of climate science (i.e. anthropogenic causes, greenhouse effect, climate vs. weather), and how to make climate-conscious decisions (United States Global Change Research Program, 2009). While climate literacy is an important first step in creating a climate literate society, CCE must work to move beyond climate literacy to enact social change at the individual and communal level; while a climate literate society may know *how* to make responsible decisions for the climate, these decisions actually have to be made in order to combat climate change (Vaughter, 2016).

Barriers to Climate Literacy in Formal Education

Despite a 97% consensus among climate scientists that climate change is primarily caused by humans, anthropogenic climate change has become a hot topic for political and social debate in many European and North American contexts (Cook et al., 2013). Conflicting information from the scientific community and media sources makes interpreting climate data and impacts uniquely challenging for teachers and students alike (Kahlor & Rosenthal, 2009). Additionally, teaching about climate change is not required in all public school settings (and is even banned in some cities and states), leaving teachers without reliable curriculum on this topic (Trott 2019a; Wise, 2010). Plutzer et al. (2016) polled public school science teachers (n=1500)

and found that less than half of them knew that there was nearly unrefuted consensus among climate scientists that climate change is caused by humans, with similar results reported in polls of the public (Myers et al., 2015). Teachers may likely contribute to the misrepresentation of climate change as a "debate" with two equal sides by mirroring this process in the classroom (Plutzer et al., 2016). For these reasons, there has been a push in recent years to focus on climate literacy among both the general public and more specifically in the K-12 learning context. Due to the barriers of teaching climate change in the classroom, non-formal educators play an increasingly critical role in educating youth about climate change.

Non-formal Climate Change Education

Even as a relatively new field, non-formal climate change education methods are grounded in a long tradition of experiential education pedagogy. Elements of play, place-based learning, storytelling, and student-centered learning have all shown to be effective methods to teach youth about climate change (Doyle, 2019; Hallar et al., 2011).

Non-formal CCE takes place outside of the classroom in settings such as environmental education centers, museums, outdoor lab stations (Hallar et al., 2011), Boys and Girls Clubs (Trott, 2019a) and church yards (Leonard et al., 2016). Non-formal CCE programs have the advantage of being nested within sociocultural contexts that are more familial, somewhat less constrained by scheduling, and potentially more reflective of participants' community than traditional school (DeJarnette, 2012). Exposure to non-formal CCE, especially community or place-based programs, is fertile ground for inspiring youth action. Public school teachers may even be able to take advantage of this type of CCE in the form of school field-trips or field experiences such as the collaboration between Colorado Public Schools and the Storm Peak Laboratory (Hallar et al., 2011). Non-formal educators must work to make these types of

experiences more accessible to public school teachers and youth alike, which can help inspire future climate action while also meeting program and classroom goals.

Solutions-Focused CCE

Focusing on climate solutions can provide tangible actions for how to address climate impacts and is therefore one approach to CCE that can help transition from climate literacy to climate action (Trott, 2019a, Vaughter, 2016). Climate solutions can be broadly categorized as climate mitigation or climate adaptation strategies. Climate mitigation strategies are focused on reducing greenhouse gas emissions (i.e. transitioning to solar power) while climate adaptation strategies are focused on adjusting to present and future climate impacts (i.e. opening cooling centers during extreme heat advisories) (National Aeronautics and Space Administration, 2021). Vaughter (2016) suggests that if the end goal of CCE is to take climate action, both individual and systems level solutions should be addressed. Related to the solutions-focused approach, McKeown & Hopkins (2010) propose incorporating issue analysis into CCE, which involves investigating climate impacts from several lenses (i.e. historical, geographic, environmental, social, political, interdisciplinary) before brainstorming a proposed solution. Issue analysis "assist[s] people in untangling the complexity of issues so they can see the roots, consequences, and paths forward" (McKeown & Hopkins, 2010, p. 19) which is critical in developing climate-conscious youth who can not only assess the effectiveness of existing solutions, but also create new and innovative climate mitigation and adaptation strategies.

Youth-led CCE

Studies that examine the role of youth in educating their peers and families about climate change reveal that youth-led climate change education can have a lasting impact beyond the bounds of any one program (Cherry, 2011). For example, Peek (2008) offers examples of youth-

led involvement in climate disaster response, including facilitating peer healing sessions, organizing clean-ups, and distributing resources to family and friends.

The importance of youth-led CCE and action can also be seen in the recent rise in climate change movements such as the international School Strike 4 Climate Action started by Greta Thunberg (Boulianne et al., 2020), The Sunrise Movement, and youth involvement in creating the Green New Deal (Yona et al., 2020). These movements involve millions of youth across the globe, showcasing young people's ability to combine traditional education and organizing methods with social media communication tools. Bowman (2020) argues that since youth are a marginalized group that intersects with other marginalized identities such as race, class, sexuality and gender, youth climate activism is a form of "subaltern activism" (Bowman, 2020, p. 2). As such, "young people orient their action towards 'a system of interlocking oppressions'" (Bowman, 2020, p. 3), echoing environmental justice movements led by People of Color. These overlapping movements both use an intersectional approaches that directly challenge heirarchical, colonial, capitalistic, and whitewashed mainstream environmental movements (Curnow et al. 2016; Curnow & Helferty, 2018; Faris, 2019; Schlosberg & Carruthers, 2010)

Evoking Youth Climate Action

Climate action is a nebulous term that can include everything from educating peers about climate change to creating new climate policy. In each specific context, climate action may take on new meaning with regards to audience, scope, and scale. O'Brien & Sygna (2013) outline three expanding spheres of transformation for climate response: practical (behaviors and technical responses); political (systems and structures); and personal (values and worldviews). Youth action projects in the practical sphere might include creating an app to track one's personal carbon footprint. Creating a schoolwide policy that bans idling on campus fits within

the political sphere while an example of a project in the personal sphere might be teaching a climate communications workshop at a school event.

Recent studies have shown that fear-tactics are ineffective in inspiring action among youth (Doyle et al., 2019, Wibeck, 2014, Schriener et al., 2005). Thus, it is important for youth to envision futures beyond the negative, apocalyptic, and hopeless narratives present in the media, news reporting, and climate reporting in order to cultivate hope (Wibeck, 2014). Meaningful relationships with adults can be a source of this hope. In a moving letter to her grandmother about why she decided to become a climate activist titled, "if adults won't save the world, we will", Xiye Bastida says, "I do this work this work because you [Abuela] showed me that resilience, love and knowledge are enough to make a difference" (Bastida, 2020, 7:26). Within the context of climate change education, Schriener et al. (2005) argue that CCE can instill hope by increasing knowledge of climate science, helping youth identify positive personal, collective, and societal climate actions, and building channels of influence with others. These elements are useful guideposts for non-formal climate change educators to evaluate the effectiveness of their climate change education efforts when youth empowerment and action are programmatic goals. Borrowing practices from related fields such as citizenship education, which incorporates ethics development, group decision-making, equity, and justice into curriculum, can also help situate climate change within a triple-bottom line framework (economic, social and environmental) and help participants link local climate actions to national and global efforts (Vaughter, 2016; Wolf et al. 2009).

Additionally, providing opportunities for youth to educate others (i.e. peer to peer, to the public) can help increase intrinsic motivation, foster deeper learning of climate change concepts, and increase engagement with environmental issues in the future (Cherry, 2011; Rooney-Varga et al.,

2014; Trott, 2019b). Youth can even take ownership of their own CCE with proper facilitation and guidance from peers and adults (Wibeck, 2014). Youth ultimately must take ownership over their own climate action if they are to become effective and independent climate changemakers in the future.

Youth-Adult Partnerships

Within the academy, youth participation in socio-political contexts has been framed as a social justice issue (White et al., 2017), a way to increase youth empowerment and community connections (Christens & Peterson, 2012) and as a basic human right (United Nations, 1989). Authentic youth participation means that young people are actively engaged in positively influencing the world around them, particularly with processes that directly affect their lives (Checkoway, 2011). Because of the unbalanced power dynamic between youth and adults, adults must create pathways for youth participation that can then lead to youth-adult partnerships (Checkoway, 2011). According to Zeldin et al. (2014) youth-adult partnership "is characterized by the explicit expectation that youth and adults will collaborate in all aspects of group decision-making from visioning to program planning, to evaluation and continuous improvement" (p. 338). Building on this definition, The Search Institute identified five factors of successful youth-adult partnerships: providing support, expressing care, challenging growth, sharing power, and expanding possibilities (Sullivan et al., 2018, p. 437).

Non-formal CCE programs, which focus on connecting climate literacy to climate solutions and action (Krasny et al., 2015) present a compelling space within which to explore and develop these partnerships between youth and adults. From international groups such as the United Nation Secretary General's Youth Advisory Group on Climate Change (United Nations, n.d.) to local efforts such as the Durham Youth Climate Justice Initiative (Durham Youth

Climate Justice Initiative, n.d.), examples of youth-adult partnerships addressing climate issues exist in many contexts and have been occurring for at least three decades (Yona et al., 2020). Varying styles of youth participation and involvement may be present in these types of initiatives according to factors such as setting, program goals, and time constraints. Youth participation in youth-adult partnerships can take many forms, from adult-initiated where decision-making is shared with youth, to youth-initiated where decision-making is shared with adults (Hart, 1992).

Existing literature addressing youth-adult interactions around climate change focuses on youth experiences with adultism (Bastida, 2020; Bowman, 2020), how adults can empower youth (U.N., 2021), and the need for more participatory pedagogies within climate change education (Rousell & Cutter-Mackenzie-Knowles). One study addressed all three of these themes (adultism, empowerment, and participatory pedagogies) through using interactive climate change games and activities, personal and community action projects, and the arts-based participatory method of photovoice with 10-12 year-olds at local Boys and Girls Clubs (Trott et al., 2019b). The outcomes of this study suggest the need for more research involving participatory methods where youth and adults collaborate to take climate action.

Youth Participation Frameworks

Hart's Ladder of Participation

Hart's (1992) ladder of participation is a well-known youth participation framework that has been widely utilized, critiqued and expanded in the decades since its creation. It is important to note that Hart adapted Arnstein's (1969) ladder of citizen participation, applying this model specifically to child participation. Hart's ladder outlines a range of child participatory outcomes with adults from manipulation, decoration, and tokenism (non-participation) to degrees of participation: assigned but informed; consulted and informed; adult-initiated, shared decisions

with children; child initiated and directed; and child-initiated, shared decisions with adults (Hart, 1992). The ascending steps of the ladder imply that some forms of youth participation are more valuable than others, which is one critique of this model (Cahill & Dadvand, 2018). Hart later revised his model, transitioning from levels of participation in a ladder to forms of participation visualized as a scaffolding to emphasize the mutualism in youth-adult relationships (Hart, 2008). Hart's (1992) ladder has inspired other youth participation models such as Shier's (2001) Pathways to Participation, as well as reworkings of the original model into a rope ladder (Arunkumar et al., 2019).

Pathways to Participation Model

In response to Hart's (1992) original ladder and The United Nations Convention on the Rights of the Child (1989), Sheir (2001) presents an alternative framework rooted in five levels of child participation, which mirror the top five rungs on Hart's ladder. Within each level, "openings" occur when adults make a personal statement of intent to work with young people; "opportunities" happen once there is organizational support for child participation; and "obligations" are when this support is formalized within organizational operations and policies (Sheir, 2001, p. 110). Questions posed at each level of the model help adults consider how they might be able to increase child participation within their practice. For example, on the first level ("children are listened to") questions like, "do you work in a way that enables you to listen to children?", imply the importance of adults considering their current work practice and positionality in relation to young people (Sheir, 2001, p. 111). While Hart's (1992) model and Sheir's (2001) model focus on child participation, these same principles have also been applied in working with youth (Sullivan et al., 2018).

Rope Ladder Model

The static implication of Hart's (1992) ladder poses problems for the dynamic nature of participation. Arunkumar et al. (2019) proposes a reworking of the wooden ladder into a 3-D rope ladder which can be braided, swung, knotted and looped (p.10). Swinging emphasizes the way in which youth and adults fluidly move between and among different forms of participation throughout the research process, rather than staying in one place. Braiding individual strands together reinforces the ladder and symbolizes how each group member contributes to the whole. Knotting can create new pathways of navigation, representing problem solving and collaboration. And finally looping the rope symbolizes the accountability, support, and reflection present in successful youth-adult partnerships (Arunkumar et al., 2019). The mobility, adaptability and flexibility suggested in the rope ladder metaphor build upon Hart's original model, bringing the use of such frameworks into contemporary participatory research and practice.

P7 Model

Cahill & Dadvand (2018) propose a critical thinking tool that adults can use to consider the interlocking complexities of collaborating with youth in a specific initiative, program or research project. Grounded in post structural theory, critical theory, feminist theory and youth studies, this conceptual model aims to bridge theory and practice using seven interlocking elements visualized in a gear-like diagram. The seven P's (place, process, purpose, protection, positioning, power relations, and perspective) help adults bring underlying assumptions and values to the forefront in an effort to maximize collaboration with youth. While this model was designed for use in formal education, policy, and research settings, it is translatable to other settings such as non-formal CCE.

Barriers to Youth Participation

Despite international attention about the issue of youth participation as exhibited in declarations such as the United Nations convention on the Rights of the Child (United Nations, 1989) there continues to be limited engagement of youth in adult-centered processes (Freeman & Aitkin-Rose, 2005). Adults willing to work with youth often lack the experience to empathize and respond meaningfully to young people's realities, leading to their continual exclusion from decision-making processes (Arunkumar et al., 2019). However, youth can even be tokenized within decision-making processes when there is no concerted effort to integrate their perspectives into the final product or make future participation easier (De Winter, 1997). Additionally, when youth are invited or integrated into collaborations with adults, factors such as how power is negotiated, shared, or kept from youth remain understudied (Percy-Smith, 2006).

Summary

Climate change is a pressing challenge of our time encompassing economic, social, and environmental threats that are already impacting communities across the globe (International Panel on Climate Change, 2021). Youth, while especially vulnerable to climate impacts, are also leading efforts of their own to increase awareness about climate threats and take their future into their own hands. Both theory and practice are lacking in exploring youth-adult partnerships for climate action, highlighting the need for more studies exploring this topic especially within the non-formal CCE space (Schuster & Timmermans, 2017). Frameworks for youth-adult partnerships (Cahill & Dadvand, 2018) and youth participation (Hart, 1992; Zeldin et al., 2014) exist within the broader literature but have not been used extensively in CCE contexts. In response to this current body of literature, this study will explore youth-adult collaboration for climate action through the process of planning a climate action project.

CHAPTER 3: METHODS

Youth Participatory Action Research

Youth Participatory Action Research (YPAR) is a research methodology employed with, for, and by youth to create solutions to problems they face in their lives (Cammarota & Fine, 2010; University of Berkeley, n.d.). YPAR is highly context dependent, place-based, and emergent, making it difficult to formulate a blanket process applicable to every YPAR study. In the fields of education and community development, YPAR-driven studies tend to follow a cyclical process such as "look, think, act" (Stringer, 1996) or "plan, act, observe, reflect" (Kemmis et al., 2014) that treat research as an ongoing, collaborative process rather than a one-time event led by the researcher. At its heart, YPAR defines youth as co-creators of knowledge, challenging the idea that adults are the necessary experts or problem-solvers for youth issues (Cammarota & Fine, 2010). YPAR studies can provide context, resources, and a platform for youth to share personal experiences, meet other impacted youth and community members, and collaborate on solutions that combat systems of oppression. For this reason, YPAR is especially effective with youth who are experiencing oppression because of their race, gender, religion, sexuality, class, or other identity. Like other forms of Participatory Action Research, YPAR studies strive to promote justice and create social change (Marshall & Rossman, 2016). However, whether these goals can be met within a formal pedagogical process is a topic of much debate within the action research community (Cammarota & Fine, 2010).

Few studies explore how and why youth take action on climate change and more specifically, how adults and youth can work *together* to address local issues. Schuster & Timmermans (2017) discuss the need for more research examining adults and the roles they play in engaging youth in research, identifying this as a current gap in the literature. While YPAR has

been used in previous CCE studies examining youth action (Trott 2019a, Trott 2019b), very few studies in this field explore the explicit role that adult climate change educators play in facilitating and participating in YPAR.

YPAR & Adultism in Academia

Youth-led social change movements to address gun violence, climate change and environmental justice are well documented (Teixeira et al., 2021). These issues directly impact the lives of youth and, therefore, their involvement in creating solutions is urgently needed. However, research continues to be an adult-centered and constructed space which poses many barriers to youth participation in the research process (Bettencourt, 2018). For example, most International Review Boards (IRB) lack youth representation despite many studies involving participants who are minors. Additionally, IRBs can emphasize an individualistic, objective and positivist approach to research which is in direct opposition to participatory research methods that center shared decision-making, personal experience and co-creation of knowledge through the research process (Ozer et al., 2013). For this reason, YPAR researchers commonly refer to youth as subjects rather than active co-researchers in their IRB applications (Teixeira et al., 2021). While this is one way to make YPAR studies more appealing within the current IRB application process, restructuring youth as active, capable partners rather than a vulnerable population in need of adult assistance could help further legitimize participatory methods within the academy (Ritterbusch, 2012).

Bricolage

The French term “bricolage” refers to people who creatively construct something new out of leftover materials (Levi-Strauss, 1966). In research, bricolage is a unique and emergent methodological approach that quilts together multiple theories, perspectives and methodologies

to interpret meaning from data (Rogers, 2012; Yardley, 2008). Wibberly (2012) argues that, "the emergent nature of bricolage allows for bite-size chunks of research to be carried out that have individual meaning for practice, which can then be pieced together to create a more meaningful whole" (p. 1). Opposing research methods that follow a pre-determined set of procedures, bricolage instead leans into "methodological practices explicitly based on notions of eclecticism, emergent design, flexibility and plurality" (Rogers, 2012).

Bricolage & Participatory Action Research

Bricolage is often used in Participatory Action Research because both approaches attempt to deconstruct, redefine and critique the relationship between researcher and participant on a more equal playing field (Rogers, 2012; Wibberly, 2012). In addition, both bricolage and participatory methods investigate the process of research rather than focusing on any end products (Bettencourt, 2018; Rogers 2012). Thus, coupling bricolage and YPAR creates pathways to creatively explore power, youth participation, and youth-adult partnership through the inclusion of multiple forms of data and meaning-making that emerge throughout the research process.

Research Methodology

In this study, I employed the use of Youth Participatory Action Research (YPAR) coupled with bricolage to engage three high-school age youth in the research process. The youth participants in this study were former teen ambassadors in a 10-month non-formal climate change education program where I was one of the lead educators. We (youth participants and I) used the following research question to guide our inquiry: what are youth and adult experiences of the YPAR research process while co-creating a climate action project? Over the course of

three months, youth and I participated in four virtual action project planning sessions and then implemented our action project at a local Youth Climate Summit.

Recruiting Youth Participants

Trust and group familiarity are crucial to the success of YPAR (Stieglitz & Levitan, 2021), suggesting that YPAR oriented studies should either build in ample time for group bonding and trust formation or work with a group of people who already know each other. For this study, I chose to recruit youth who had formerly participated in a climate change education program with me because our previous time together formed a strong foundation for exploring the research question using a YPAR methodology. Participants in this study had to meet the following criteria:

1.) Be a current high school student during the Fall 2021 semester; and

2.) Have been an active participant throughout the climate change program (indicated by receiving their attendance stipend).

All interested youth were invited to attend an introductory session with their parents to learn more about the research study before self-selecting to join. While I initially had five interested youth, I ended up with three participants. This small group size allowed the youth participants and me to actively participate in the virtual setting and generate a manageable amount of data given the short-term scope of this master's level research study.

Adult Positionality

I identify as a white, American, gender-fluid adult in my 20s. These identities impact how I teach and interact with diverse youth in complex ways. For example, as a White, woman-presenting individual, I benefit from White privilege and binary privilege in my interactions with youth and other educators because of my skin color and gender presentation. As a gender fluid

individual, I try not to assume gender before someone chooses to share this information with me, such as telling me their pronouns. Each of these considerations impacts my own positionality as well as the way I perceive youth participants.

I also identify as a climate change educator. In addition to my prior experience completing action projects as a young person, I have been mentoring teens in formal and non-formal education settings as they plan and implement community action projects for the past four years. I am deeply passionate about this work in my professional practice which is why I was interested in developing a research study around this topic.

In addition to these identities, I must acknowledge my role as a former educator of the youth participants in this study. This educator- student relationship, and my personal investment in the research study as a part of my Master's thesis requirements did contribute to existing power dynamics between youth and me during the study. For example, youth sometimes asked me during sessions or over e-mail between sessions if it was okay to share an idea they had with the group. At first, they also deferred to me to lead the sessions by taking notes and facilitating discussion. While some of this power shifted or transitioned throughout the study, our relationship was originally developed within the context of a non-formal education program where I was in a position of authority.

Ethical Considerations

I received International Review Board (IRB) approval to conduct this study because it involved doing research with human subjects. Since I did research with minors, I collected both parental consent and youth assent before beginning data collection. To protect the privacy of participants, they had the choice to select a pseudonym to be used in potential research publications if desired.

When recruiting youth to join this study, I was aware that the prior educator-student relationship between youth and me could have resulted in undue pressure for youth to participate. To avoid this, I recruited youth participants using my university e-mail address rather than work e-mail and hosted an optional introductory session to introduce youth and their parents to the study before committing. I also took extra effort to ensure youth understood their participation in this study was entirely optional and that they knew it was separate from their participation in the YES-Resilience program and all prior research studies. This information was reiterated on consent/ assent forms given to youth and their parents after the introductory session.

Method 1: Groupwork Sessions

By sharing power and decision-making, groups of youth and adults can prioritize collective goals rather than focusing on individual growth and benefits (Sullivan et al., 2018). Forming youth-adult partnerships for social action can yield positive impacts for all involved (i.e. combatting adultism, contributing to positive youth development) and is often most authentically conducted in a group setting (Arches, 2012; Zeldin et al., 2014). Arches (2012) argues that self-directed groupwork conducted by youth with adult facilitation is a highly effective method for studies with participatory methodologies. Additionally, utilizing groupwork methods centers research around group process rather than product, which is a priority in YPAR and when using bricolage (Bettencourt, 2018; Rogers, 2012).

With this in mind, and given the participatory nature of this study, I chose to employ the use of a group-oriented data collection method. The bulk of data collection occurred during four ninety-minute groupwork sessions. Due to the risks of meeting up-in person during COVID-19, groupwork sessions were conducted virtually over Zoom. While being in-person would have been my preferred setting for conducting these sessions, going virtual provided more scheduling

flexibility for when sessions occurred and eliminated barriers facing youth participants such as coordinating travel logistics with family members. Youth participants and I used these groupwork sessions to discuss group dynamics, brainstorm ideas, plan our action project, and self-reflect.

I facilitated our first groupwork session by reviewing the research study, leading the creation of our group contract, and designing a set of prompts to kickstart our collaborative group process. During this session, youth also decided how they would like to reflect on their role within the research process during our subsequent sessions. The rest of the groupwork sessions were intentionally less structured to allow youth to take the lead of the action project planning process (or instruct me to do so if desired). During these sessions, I was prepared to offer project examples/ideas, planning frameworks, tools, and other project planning resources as necessary.

Method 2: Reflexive Journaling

Engaging in reflexive journaling allows researchers to continually go back to the literature to answer questions, better understand research methodology, justify decisions throughout the research process, and continue to be critical of researcher positionality and role (Ortlipp, 2008). Reflexive journaling can also help qualitative researchers examine how they interact with participants and become experts on their own thinking and reflecting patterns during a study (Janesick, 1999). This method is especially beneficial to novice qualitative researchers who are engaging with complex data collection methods and analysis and considering their own epistemological perspective for the first time (Meyer & Willis, 2018). I kept a reflexive journal during this study, writing an entry before and after each groupwork

session. Stemming from my research question, I used the following journaling prompts to reflect on my experience as the adult in the study:

1.) How do I participate/ want to participate during the groupwork session (i.e. am I mentoring, teaching, observing, collaborating, steering?)
2.) What do I want the dynamics to be like / were the dynamics like between youth co-researchers and I (i.e. power, speaking vs. listening, leadership and facilitation of session)?
3.) Connections between research process and my work as a practitioner (how is this study informing my practice?)

Reflexive journaling provided an opportunity for me to critically analyze my role as an adult engaging with youth in YPAR, including how I facilitated, gave up control, listened to youth, and steered the conversation (Zeller-Berkman, 2007). Through this practice I embraced my role as an "interpretive bricoleur" reflexively examining my role within the research process (Denzin & Lincoln, 1999).

Setting the Stage for Youth-Adult Partnership

Cahill & Dadvand (2018) created the p7 model for examining how adults can define roles in projects or programs with youth, which extends to the YPAR process. In my study, I used the p7 model to help define my role as a practitioner-researcher and position youth as co-collaborators in the research process. This framework acted as a continuous sounding board for my reflexive journaling, specifically as a way to reflect on my role as the adult in this study. Below are Cahill & Dadvand's (2018) defining questions for each "p" followed by how I answered each in the context of my study. Please note that I have kept responses in future tense, as I answered these questions prior to engaging with youth during data collection.

Place: **How will you respond to context and culture?** This project will take place in a virtual setting with a small group of youth and adult co-collaborators who already know each other. I will respond to the context of working with youth on a collaborative climate project by centering their input and thoughts throughout the research process.

Process: **What methods will you use to foster interaction?** We will foster interaction by starting sessions off with an informal time to check in with one another. When appropriate, I will embrace silence and let youth talk to each other rather than only to me.

Purpose: **What contribution do you aim to make?** As the adult participating in this study, I hope to co-create knowledge with youth through the action project planning process. I will contribute to this process by providing the space for this study to happen as well as through reflexively journaling.

Perspective: **How will you embrace diversity and difference?** I will aim to embrace differences of opinion or direction by setting ground rules for and with youth co-researchers which we will revisit at the start of each session. I will also make sure co-researchers know their participation is encouraged and appreciated but ultimately optional if they feel unsafe or unable to continue. If/when conflict arises, I will attempt to facilitate resolution with the group and follow up with individuals if necessary. I will also help youth define for themselves the ways they are actively participating in the research process (i.e. speaking, typing, writing, individual and group reflection) and making space for students who may not immediately share their insights with the group to participate.

Positioning: **How will young people get to contribute?** Youth co-collaborators will contribute to the research process by taking the lead on developing and implementing the action project, including what climate impact they want to address, who the audience will be, who will be

responsible for what roles, etc. Youth will also decide the method for their reflection of the research process.

Protection: **How will you ensure safety?** I will ensure safety in this study by making sure minors sign informed consent forms, know that their participation in the study is optional, and can leave the study at any time if needed.

Power Relations: **How will you build inclusion and respect?** I will build inclusion and respect by clearly defining my role and the roles of co-researchers before the study begins, recognizing the pre-existing power dynamics of our relationship, and fostering active listening, group facilitation and collaboration rather than directly leading or teaching.

Data Analysis

In a YPAR study, youth should ideally be involved in all stages of the research process including data analysis (London et al., 2003). However, in practice many barriers to involving youth in data analysis exist, including the time, prior knowledge and resources needed to train youth; large amounts of data that may need to be processed; and making this process relevant to the youth themselves (Rodriguez & Brown, 2009). Despite these issues, there are studies that successfully involve youth in the data analysis process (MacDonald et al., 2011; Silva et al., 2002). In this study, youth and I collaboratively analyzed data by self-reflecting on our own roles within the research process at the end of each groupwork session. While these reflections focused on our individual roles, they were shared in a collaborative space (Jamboard) and followed with a group discussion where we were able to respond to one another's thoughts, see connections and differences among responses, and make goals for our participation during the next session.

The data for this study takes many forms, from video recordings and audio transcripts of group discussion to website links, personal artwork, collaborative notes, and journal entries. To present and analyze this data, I employ the use of bricolage (Rogers, 2012). Utilizing bricolage provided a way to visualize and make meaning of the data in this study by quilting together the perspectives of youth participants and I throughout the research process.

When using bricolage, the researcher becomes a "bricoleur" responsible for piecing together and interpreting data as it emerges through the study. Denzin & Lincoln (1999) describe five different types of bricoleurs: interpretive, methodological, theoretical, political, and narrative. During data analysis, I embodied both the interpretive and political bricoleur through reflexively examining my position of power as the adult. By embracing an emergent design, multiple forms of data, and several theoretical perspectives (YPAR, youth development, bricolage) I became a theoretical/ methodological bricoleur. Finally, I became a narrative bricoleur through weaving together youth perspectives and reflections throughout the study alongside my own. During our action project planning process, youth also became bricoleurs by reflexively examining their roles as researchers, critically reflecting on past experiences with adults, and prioritizing an action project that could effectively combine each of their own unique passions and perspectives. Echoing the data emerging from the study, we pieced together quotes, stories, prompts, and art into a youth climate workbook designed to guide and inspire other youth to take climate action. Our final act of inviting other youth to participate in a collaborative poetry activity was in itself a mini-bricolage; each line of the poem was contributed by a different individual which, when stitched together, became a continuous poem. In this way, bricolage moved beyond a methodological approach or way to analyze data, becoming a meaning-making tool for us to utilize in designing and implementing our action project (Levi-Strauss, 1966).

Manuscript Thesis Option

Per the Western Carolina University Experiential and Outdoor Education Handbook, I have chosen to complete the manuscript thesis format option. This option requires Chapters One, Two and Three plus a full-length journal manuscript formatted to the requirements of a specific journal. The following chapter contains my complete manuscript, which I have chosen to submit to the Journal of Participatory Research Methods. This journal requires authors to submit a manuscript that is approximately 8,000 words and written in APA format. Please note that the journal requests images are placed within the document where referenced.

CHAPTER 4: FULL-LENGTH JOURNAL MANUSCRIPT

Youth Got the Power: Building Youth Adult Partnerships for Climate Action

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Author Note

Raily, Carden and Kimberly are youth co-contributors to this study. They have been credited as co-authors on this manuscript because of their significant contribution to the study as participants, researchers, editors, and co-creators of knowledge. All youth were given a draft of this paper to read and provide feedback prior to submission. Correspondence concerning this article should be addressed to Hannah Barg, hbarg1@catamount.wcu.edu.

Abstract

Global anthropogenic climate change is an urgent environmental, public health, and social justice issue that disproportionately impacts vulnerable populations including children and youth[1] (Dimitrov, 2010; Intergovernmental Panel on Climate Change, 2021).). Despite recent involvement in climate action on the national and international stage (Boulianne et al., 2020; Peek, 2008; Yona et al., 2020), youth continue to be underutilized as key stakeholders in developing and implementing climate solutions (Trott, 2019a), which is a form of adultism (DeJong & Love, 2018). Given that youth are often left out of important climate conversations, decision-making processes, and action taken by adults, few studies explore how adults and youth can work together to address local issues. Schuster & Timmermans (2017) discuss the need for more research examining adults and the roles they play in engaging youth in research. Thus, the purpose of this study is to explore how adults and youth can work together to take climate action within the context of non-formal Climate Change Education. Using a Youth Participatory Action Research (YPAR) methodology, this study was conducted for, with, and by a subset of youth who previously participated in a teen climate ambassador program. During virtual groupwork sessions, youth and I participated in a collaborative planning process to design a climate action project. Since youth should ideally be involved in designing and conducting research in a YPAR study (London et al., 2003), we worked together to define, enact, and understand research through the context of climate action project planning. Many different forms of data (i.e., group discussion, collaborative notes, art, poetry) emerged throughout the study, and they were co-analyzed with youth and woven together using a bricolage format. Results examine power dynamics, collaborative process, and how youth and I each embodied the roles of participant and

[1] For the purpose of this study, youth are defined as individuals between the ages of 15 and 24 (United Nations, n.d.a).

researcher within the context of a YPAR project. This study has particularly relevant implications for adults partnering with youth to take community action.

Keywords: youth-adult partnerships, youth participation, youth participatory action research, climate change education, climate action

Introduction

Xiye Bastida is a lead organizer for the Fridays for Future youth climate strike movement. Starting with the environmental club at her high school in New York City, Bastida mobilized school walkouts, planned climate strikes, and eventually attended the United Nations Climate Summit alongside Swedish climate activist Greta Thunberg (Bastida, 2020). Bastida is just one among millions of young people across the globe who see the impact the climate crisis is already having on their lives. These youth are calling for policy change, political action, and scaled climate solutions (Boulianne et al., 2020; Bownman, 2020). However, despite recent international involvement in climate action, youth continue to be an underrepresented group in helping to create climate solutions, which involve policymakers, government workers, urban and rural planners, educators and even family members (Boulianne et al., 2020; Trott, 2019a). A form of *adultism* (DeJong & Love, 2018), youth are discriminated against due to factors such as age, perceived inability to conceptualize complex problems, and their heightened vulnerability to climate hazards (Trott, 2019b). Additionally, youth are continuously valued by adults as the people they will become in the future rather than for the present contributions they can make, compounding factors of adultism (White et al., 2017). Nevertheless, young people are creative communicators, problem solvers, and experts of their own lived experience, making them vital stakeholders and leaders in their communities (Jones et al., 2015; United Nations, 2021). Youth also play an essential role in educating peers and family about climate change (Cherry, 2011). Increased attention to studying young people's involvement in environmental movements since the 1990's has helped expose the depth and breadth of youth's commitment to, investment in and knowledge about issues that impact their communities and lives (Bowman, 2020; Hart, 1994).

While existing literature examines youth climate literacy rates (Schriener et al., 2005), barriers to climate education (Brownlee et al., 2012; Gifford, 2011), and what factors lead to climate action or inaction among youth (Norgaard, 2011; Ojala, 2016) few studies explore how adults and youth can work *together* to address local climate issues within the context of Climate Change Education. Since Climate Change Education (CCE) is an established field where youth and adults may already be exploring climate solutions, this makes it an ideal setting for exploring how youth and adults can partner for climate action.

Youth Climate Change Education

Youth Climate Change Education (CCE) is a relatively new field, emerging in the 1990s with roots in the environmental education and Science, Technology, Engineering and Mathematics (STEM) disciplines (Hung, 2014; McKeown & Hopkins, 2010). Formal CCE taught in the classroom has traditionally focused on teaching about the science of climate change (Krasny et al., 2015). While this is an important part of climate literacy, evidence suggests that centering only on scientific understanding does not lead to taking climate action (Monroe et al., 2017). Non-formal youth CCE, which takes place during out-of-school time, focuses on climate science as well as the broader social context of how to make an impact. Krasny et al. (2015) suggest that non-formal climate change educators can therefore play an important role in bridging climate literacy with climate action through focusing on topics such as advocacy and civic engagement, environmental justice, and collective vs. individual action. While existing literature examines youth climate literacy rates (Schriener et al., 2005), barriers to climate education (Brownlee et al., 2012; Gifford, 2011), and what factors lead to climate action or inaction among youth (Norgaard, 2011; Ojala, 2016) few studies explore how adults and youth can work *together* to address local issues. Since non-formal CCE is an established field where

youth and adults may already be exploring climate solutions (or could easily incorporate this into their programs) this makes it an ideal setting for exploring how youth and adults can partner for climate action.

Evoking Youth Climate Action

Climate action is a nebulous term that can include everything from educating peers about climate change to creating new climate policy. In each specific context, climate action may take on new meaning with regards to audience, scope, and scale. O'Brien & Sygna (2013) outline three expanding spheres of transformation for climate response: practical (behaviors and technical responses); political (systems and structures); and personal (values and worldviews). Youth action projects in the practical sphere might include creating an app to track one's personal carbon footprint. Creating a schoolwide policy that bans idling on campus fits within the political sphere while an example of a project in the personal sphere might be teaching a climate communications workshop at a school event.

Recent studies have shown that fear-tactics are ineffective in inspiring action among youth (Doyle et al., 2019, Wibeck, 2014, Schriener et al., 2005). Thus, it is important for youth to envision futures beyond the negative, apocalyptic, and hopeless narratives present in the media, news reporting, and climate reporting in order to cultivate hope (Wibeck, 2014). Meaningful relationships with adults can be a source of this hope. In a moving letter to her grandmother about why she decided to become a climate activist titled, "if adults won't save the world, we will", Xiye Bastida says, "I do this work this work because you [Abuela] showed me that resilience, love and knowledge are enough to make a difference" (Bastida, 2020, 7:26). Within the context of climate change education, Schriener et al. (2005) argue that CCE can instill hope by increasing knowledge of climate science, helping youth identify positive personal,

collective, and societal climate actions, and building channels of influence with others. Schriener et al. (2005) argue that CCE for youth empowerment can instill hope by increasing knowledge of climate science, helping youth identify positive personal, collective, and societal climate actions, and building channels of influence with others. These elements are useful guideposts for non-formal climate change educators to evaluate the effectiveness of their climate change education efforts when youth empowerment and action are programmatic goals. Borrowing practices from related fields such as citizenship education, which incorporates ethics development, group decision-making, equity, and justice into curriculum, can also help situate climate change within a triple-bottom line framework (economic, social and environmental) and help participants link local climate actions to national and global efforts (Vaughter, 2016; Wolf et al. 2009). Additionally, providing opportunities for youth to educate others (i.e. peer to peer, to the public) can help increase intrinsic motivation, foster deeper learning of climate change concepts, and increase engagement with environmental issues in the future (Cherry, 2011; Rooney-Varga et al., 2014; Trott, 2019b). Youth can even take ownership of their own CCE with proper facilitation and guidance from peers and adults (Wibeck, 2014).

Youth-Adult Partnerships

According to Zeldin et al. (2014) youth-adult partnership "is characterized by the explicit expectation that youth and adults will collaborate in all aspects of group decision-making from visioning to program planning, to evaluation and continuous improvement" (p. 338). The Search Institute identified five factors of successful youth-adult partnerships: providing support, expressing care, challenging growth, sharing power, and expanding possibilities (Sullivan et al., 2018, p. 437).

From international groups such as the United Nation Secretary General's Youth Advisory Group on Climate Change (United Nations, n.d.) to local efforts such as the Durham Youth Climate Justice Initiative (Durham Youth Climate Justice Initiative, n.d.), examples of youth-adult partnerships addressing climate issues exist in many contexts and have been occurring for at least three decades (Yona et al., 2020). Varying styles of youth participation and involvement may be present in these types of initiatives according to factors such as setting, program goals, and time constraints. Youth participation in youth-adult partnerships can take many forms, from adult-initiated where decision-making is shared with youth, to youth-initiated where decision-making is shared with adults (Hart, 1992). Cahill & Dadvand (2018) outline seven "P's" (place, process, purpose, protection, positioning, power relations and perspective) that can help adults identify the appropriate kind of youth participation given their specific context.

Existing literature addressing youth-adult interactions around climate change focuses on youth experiences with adultism (Bastida, 2020; Bowman, 2020), how adults can empower youth (U.N., 2021), and the need for more participatory pedagogies within climate change education (Rousell & Cutter-Mackenzie-Knowles). One study addressed all three of these themes (adultism, empowerment, and participatory pedagogies) through using interactive climate change games and activities, personal and community action projects, and the arts-based participatory method of photovoice with 10-12 year-olds at local Boys and Girls Clubs (Trott et al., 2019b). The outcomes of this study suggest the need for more research involving participatory methods where youth and adults collaborate to take climate action.

Youth Participation Frameworks

Hart's Ladder of Participation

Hart's (1992) ladder of participation is a well-known youth participation framework that has been widely utilized, critiqued and expanded in the decades since its creation. It is important to note that Hart adapted Arnstein's (1969) ladder of citizen participation, applying this model specifically to child participation. Hart's ladder outlines a range of child participatory outcomes with adults from manipulation, decoration, and tokenism (non-participation) to degrees of participation: assigned but informed; consulted and informed; adult-initiated, shared decisions with children; child initiated and directed; and child-initiated, shared decisions with adults (Hart, 1992). The ascending steps of the ladder imply that some forms of youth participation are more valuable than others, which is one critique of this model (Cahill & Dadvand, 2018). Hart later revised his model, transitioning from levels of participation in a ladder to forms of participation visualized as a scaffolding to emphasize the mutualism in youth-adult relationships (Hart, 2008). Hart's (1992) ladder has inspired other youth participation models such as Shier's (2001) Pathways to Participation, as well as reworkings of the original model into a rope ladder (Arunkumar et al., 2019).

Pathways to Participation Model

In response to Hart's (1992) original ladder and The United Nations Convention on the Rights of the Child (1989), Sheir (2001) presents an alternative framework rooted in five levels of child participation, which mirror the top five rungs on Hart's ladder. Within each level, "openings" occur when adults make a personal statement of intent to work with young people; "opportunities" happen once there is organizational support for child participation; and "obligations" are when this support is formalized within organizational operations and policies (Sheir, 2001, p. 110). Questions posed at each level of the model help adults consider how they might be able to increase child participation within their practice. For example, on the first level

("children are listened to") questions like, "do you work in a way that enables you to listen to children?", imply the importance of adults considering their current work practice and positionality in relation to young people (Sheir, 2001, p. 111). While Hart's (1992) model and Sheir's (2001) model focus on child participation, these same principles have also been applied in working with youth (Sullivan et al., 2018).

Rope Ladder Model

The static implication of Hart's (1992) ladder poses problems for the dynamic nature of participation. Arunkumar et al. (2019) propose a reworking of the wooden ladder into a 3-D rope ladder which can be braided, swung, knotted and looped (p.10). Swinging emphasizes the way in which youth and adults fluidly move between and among different forms of participation throughout the research process, rather than staying in one place. Braiding individual strands together reinforces the ladder and symbolizes how each group member contributes to the whole. Knotting can create new pathways of navigation, representing problem solving and collaboration. And finally looping the rope symbolizes the accountability, support, and reflection present in successful youth-adult partnerships (Arunkumar et al., 2019). The mobility, adaptability and flexibility suggested in the rope ladder metaphor build upon Hart's original model, bringing the use of such frameworks into contemporary participatory research and practice.

P7 Model

Cahill & Dadvand (2018) propose a critical thinking tool that adults can use to consider the interlocking complexities of collaborating with youth in a specific initiative, program or research project. Grounded in post structural theory, critical theory, feminist theory and youth studies, this conceptual model aims to bridge theory and practice using seven interlocking

elements visualized in a gear-like diagram. The seven P's (place, process, purpose, protection, positioning, power relations, and perspective) help adults bring underlying assumptions and values to the forefront in an effort to maximize collaboration with youth. While this model was designed for use in formal education, policy, and research settings, it is easily translatable to other settings such as non-formal CCE.

Barriers to Youth Participation

Despite international attention about the issue of youth participation as exhibited in declarations such as the United Nations convention on the Rights of the Child (United Nations, 1990), there continues to be limited engagement of youth in adult-centered processes (Freeman & Aitkin-Rose, 2005). Adults willing to work with youth often lack the experience to empathize and respond meaningfully to young people's realities, leading to their continual exclusion from decision-making processes (Arunkumar et al., 2019). However, youth can even be tokenized within decision-making processes when there is no concerted effort to integrate their perspectives into the final product or make future participation easier (De Winter, 1997). Additionally, when youth are invited or integrated into collaborations with adults, factors such as how power is negotiated, shared, or kept from youth remain understudied (Percy-Smith, 2006).

Methodology

Youth Participatory Action Research

Youth Participatory Action Research (YPAR) is a research methodology employed with, for, and by youth to create solutions to problems they face in their lives (Cammarota & Fine, 2010; University of Berkeley, n.d.). YPAR is highly context dependent, place-based, and emergent, making it difficult to formulate a blanket process applicable to every YPAR study. In the fields of education and community development, YPAR-driven studies tend to follow a

cyclical process such as “look, think, act” (Stringer, 1996) or “plan, act, observe, reflect” (Kemmis et al., 2014) that treat research as an ongoing, collaborative process rather than a one-time event led by the researcher. At its heart, YPAR defines youth as co-creators of knowledge, challenging the idea that adults are the necessary experts or problem-solvers for youth issues (Cammarota & Fine, 2010). YPAR studies can provide context, resources, and a platform for youth to share personal experiences, meet other impacted youth and community members, and collaborate on solutions that combat systems of oppression. For this reason, YPAR is especially popular with youth who are experiencing oppression because of their race, gender, religion, sexuality, class, or other identity. Like other forms of Participatory Action Research, YPAR studies strive to promote justice and create social change (Marshall & Rossman, 2016). However, whether these goals can be met within a formal pedagogical process is a topic of much debate within the action research community (Cammarota & Fine, 2010).

Schuster & Timmermans (2017) discuss the need for more research examining adults and the roles they play in engaging youth in research, identifying this as a current gap in the literature. While YPAR has been used in previous CCE studies examining youth action (Trott 2019a, Trott 2019b), few studies in this field explore the explicit role that adult climate change educators play in facilitating and participating in YPAR.

YPAR & Adultism in Academia

Youth-led social change movements to address gun violence, climate change and environmental justice are well documented (Teixeira et al., 2021). These issues directly impact the lives of youth and, therefore, their involvement in creating solutions is urgently needed. However, research continues to be an adult-centered and constructed space which poses many barriers to youth participation in the research process (Bettencourt, 2018). For example,

International Review Boards (IRB) lack youth representation despite many studies involving participants who are minors. Additionally, IRBs can emphasize an individualistic, objective and positivist approach to research which is in direct opposition to participatory research methods that center shared decision-making, personal experience and co-creation of knowledge through the research process (Ozer et al., 2013). For this reason, YPAR researchers commonly refer to youth as participants rather than co-researchers in their IRB applications (Teixeira et al., 2021). While this is one way to make YPAR studies more appealing within the current IRB application process, restructuring youth as active, capable partners rather than a vulnerable population in need of adult assistance could help further legitimize participatory methods within the academy (Ritterbusch, 2012).

Bricolage

The French term "bricolage" refers to people who creatively construct something new out of leftover materials (Levi-Strauss, 1966). In research, bricolage is a unique and emergent methodological approach that quilts together multiple theories, perspectives and methodologies to interpret meaning from data (Rogers, 2012; Yardley, 2008). Wibberly (2012) argues that, "the emergent nature of bricolage allows for bite-size chunks of research to be carried out that have individual meaning for practice, which can then be pieced together to create a more meaningful whole" (p. 1). Opposing research methods that follow a pre-determined set of procedures, bricolage instead leans into "methodological practices explicitly based on notions of eclecticism, emergent design, flexibility and plurality" (Rogers, 2012).

Bricolage & Participatory Action Research

Bricolage is often used in Participatory Action Research because both approaches attempt to deconstruct, redefine and critique the relationship between researcher and participant on a

more equal playing field (Rogers, 2012; Wibberly, 2012). In addition, both bricolage and participatory methods investigate the process of research rather than focusing on any end products (Bettencourt, 2018; Rogers 2012). Thus, coupling bricolage and YPAR creates pathways to creatively explore power, youth participation, and youth-adult partnership through the inclusion of multiple forms of data and meaning-making that emerge throughout the research process.

Methods

In this study, I employed the use of a Youth Participatory Action Research (YPAR) methodology coupled with bricolage (Rogers, 2012) to engage three high-school age youth in the research process. The youth participants in this study were former teen ambassadors in a 10-month non-formal climate change education program where I was one of the lead educators. We (youth participants and I) used the following research question to guide our inquiry: what are youth and adult experiences of the YPAR research process while co-creating a climate action project? Over the course of three months, youth and I participated in four virtual action project planning sessions and then implemented our action project at a local Youth Climate Summit.

Adult Positionality

I identify as a white, American, gender-fluid adult in my 20s. These identities impact how I teach and interact with diverse youth in complex ways. For example, as a White, woman-presenting individual, I benefit from White privilege and binary privilege in my interactions with youth and other educators because of my skin color and gender presentation. As a gender fluid individual, I try not to assume gender before someone chooses to share this information with me, such as telling me their pronouns. Each of these considerations impacts my own positionality as well as the way I perceive youth participants.

I also identify as a climate change educator. In addition to my prior experience completing action projects as a young person, I have been mentoring teens in formal and non-formal education settings as they plan and implement community action projects for the past four years. I am deeply passionate about this work in my professional practice which is why I was interested in developing a research study around this topic.

In addition to these identities, I must acknowledge my role as a former educator of the youth participants in this study. This educator- student relationship, and my personal investment in the research study as a part of my Master's thesis requirements did contribute to existing power dynamics between youth and me during the study. For example, youth sometimes asked me during sessions or over e-mail between sessions if it was okay to share an idea they had with the group. At first, they also deferred to me to lead the sessions by taking notes and facilitating discussion. While some of this power shifted or transitioned throughout the study, our relationship was originally developed within the context of a non-formal education program where I was in a position of authority.

Recruiting Youth Participants

Trust and group familiarity are crucial to the success of YPAR (Stieglitz & Levitan, 2021), suggesting that YPAR oriented studies should either build in ample time for group bonding and trust formation or work with a group of people who already know each other. For this study, I chose to recruit youth who had formerly participated in a climate change education program with me because our previous time together formed a strong foundation for exploring the research question using a YPAR methodology. All interested youth were invited to attend an introductory session with their parents to learn more about the research study before self-selecting to join. While I initially had five interested youth, I ended up with three participants.

This small group size allowed the youth participants and I to actively participate in the virtual setting and generate a manageable amount of data given the short-term scope of this master's level research study.

Groupwork Sessions

By sharing power and decision-making, groups of youth and adults can prioritize collective goals rather than focusing on individual growth and benefits (Sullivan et al., 2018). Forming youth-adult partnerships for social action can yield positive impacts for all involved (i.e. combatting adultism, contributing to positive youth development) and is often most authentically conducted in a group setting (Arches, 2012; Zeldin et al., 2014). Arches (2012) argues that self-directed groupwork conducted by youth with adult facilitation is a highly effective method for studies with participatory methodologies. Additionally, utilizing groupwork methods centers research around group process rather than product, which is a priority in YPAR and when using bricolage (Bettencourt, 2018; Rogers, 2012).

With this in mind and given the participatory nature of this study, I chose to employ the use of a group-oriented data collection method. The bulk of data collection occurred during four ninety-minute groupwork sessions. Due to the risks of meeting up-in person during COVID-19, groupwork sessions were conducted virtually over Zoom. While being in-person would have been my preferred setting for conducting these sessions, going virtual provided more timing flexibility for when sessions occurred and eliminated barriers facing youth participants such as coordinating travel logistics with family members. Youth participants and I used these groupwork sessions to discuss group dynamics, brainstorm ideas, plan our action project, and self-reflect.

I facilitated our first groupwork session by reviewing the research study, leading the creation of our group contract, and designing a set of prompts to kickstart our collaborative group process. During this session, youth also decided how they would like to reflect on their role within the research process during our subsequent sessions (i.e., individual journaling, drawing, video response, group discussion). The rest of the groupwork sessions were intentionally less structured to allow youth to take the lead of the action project planning process. We started each session by reviewing the action plan and summary we created during the prior session, followed by a working period to complete tasks outlined in our action plan. We ended each session by creating our action plan and summary for the next session and reflecting on our roles in the research process. Data generated during groupwork sessions included:

1.) Video recordings: all group work sessions were recorded on Zoom.
2.) Audio transcriptions: transcriptions were generated in real time using Zoom's auto-transcription software.
3.) Jamboards: During each group work session, we used an online tool called Jamboard to answer group discussion prompts, brainstorm action project ideas, create our session action plans and summaries, and take notes during the session. Jamboard is a collaborative platform that is similar to a virtual whiteboard or Google Slides. Using this tool allowed us to engage in multiple different forms of communication, including writing, drawing, and adding images, often interspersed with or followed by verbal conversation.
4.) Other: Youth and I shared other resources with each other during group sessions including personal artwork, links to websites, books, YouTube videos, maps, etc. These sources were captured in Zoom recordings, but I mention them as a separate

category here because they made a significant contribution to our action project brainstorming and planning. Several of these sources were incorporated into our final Youth Action Workbook.

Reflexive Journaling

Engaging in reflexive journaling allows researchers to continually go back to the literature to answer questions, better understand research methodology, justify decisions throughout the research process, and continue to be critical of researcher positionality and role (Ortlipp, 2008). Reflexive journaling can also help qualitative researchers examine how they interact with participants and become experts on their own thinking and reflecting patterns during a study (Janesick, 1999). This method that is especially beneficial to novice qualitative researchers who are engaging with complex data collection methods and analysis and considering their own epistemological perspective for the first time (Meyer & Willis, 2018). I kept a reflexive journal during this study, writing an entry before and after each groupwork session. Stemming from my research question, I used the following journaling prompts to reflect on my experience as the adult in the study:

1.) How do I participate/ want to participate during the groupwork session (i.e. am I mentoring, teaching, observing, collaborating, steering?)
2.) What do I want the dynamics to be like / were the dynamics like between youth co-researchers and I (i.e. power, speaking vs. listening, leadership and facilitation of session)?
3.) Connections between research process and my work as a practitioner (how is this study informing my practice?)

Reflexive journaling provided an opportunity for me to critically analyze my role as an adult engaging with youth in YPAR, including how I facilitated, gave up control, listened to youth, and steered the conversation (Zeller-Berkman, 2007). Through this practice I embraced my role as an "interpretive bricoleur" reflexively examining my role within the research process (Denzin & Lincoln, 1999).

Data Analysis

In a YPAR study, youth should ideally be involved in all stages of the research process including data analysis (London et al., 2003). However, in practice many barriers to involving youth in data analysis exist, including the time, prior knowledge and resources needed to train youth; large amounts of data that may need to be processed; and making this process relevant to the youth themselves (Rodriguez & Brown, 2009). Despite these issues, there are studies that successfully involve youth in the data analysis process (MacDonald et al., 2011, Silva et al., 2002). In this study, youth and I collaboratively analyzed data by self-reflecting on our own roles within the research process at the end of each groupwork session. While these reflections focused on our individual roles, they were shared in a collaborative space (Jamboard) and followed with a group discussion where we were able to respond to one another's thoughts, see connections and differences among responses, and make goals for our participation during the next session.

The data for this study takes many forms, from video recordings and audio transcripts of group discussion to website links, personal artwork, collaborative notes, and journal entries. To present and analyze this data, I employ the use of bricolage (Rogers, 2012). Utilizing bricolage provided a way to visualize and make meaning of the data in this study by weaving together the perspectives of youth participants and I throughout the research process. While a YPAR

framework was initially selected for this study, bricolage was retroactively added in as a methodology, data analysis tool, and way of meaning-making after youth prioritized elements of bricolage in their action project.

Results

Similar to collaging or quilting, bricolage fastens pieces of research into a whole, weaving seemingly unrelated or separate aspects of the research process together using theory. In addition to their artistry and practicality, quilts and their makers (often people with multiple marginalized identities) have deep socio-political roots in cultures around the world (Atha, 2019). For centuries, quilts have been used to build community, tell stories, pass secret messages, and as a medium for social justice activism (Atha, 2019; Kirkman, 2020). Building on this tradition, we (youth and I) became the figurative quilters (Yardley, 2008) within this study as we stitched together our own bricolages.

To help answer the research question, "what are youth and adult experiences of the YPAR research process while co-creating a climate action project?", I created a bricolage quilt with four patches focused on a different element of our action project planning process: taking action; defining research; defining and generating data; and reflection on research roles and process (see figure 1). Each square consists of quotes, segments of group discussion, narrative, images, art and poetry. Drawing from my experience as researcher and participant throughout this study, I stitch each of these elements together with action research and youth participation theory to interpret meaning from this data. While youth participants were not directly involved in the formation of the bricolage presented in this article, their own creation of the Youth Climate Workbook as a part of our final action project was in itself a mini-bricolage. The youth

participant's creative use of bricolage was the impetus for employing this methodology as a means of data analysis.

While constructing the results of this study into a bricolage, I found that I lost much of the richness, quality and meaning of the data in writing it up as a traditional paper. The textual medium was also limited in its ability to authentically preserve youth participant's voice and contributions, which were top priority for me as a YPAR researcher. Honoring the creativity that youth brought to the research process and the reality that much of our data generation occurred in the digital space, I present the bricolage in an audio-visual format. The title of each quilt square contains a hyperlink that brings the reader/ viewer to a separate YouTube video for the section (see figure 1). For those reading a physical copy of this document, I have also included URLs and QR codes (which can be scanned with a smartphone) as alternative ways to navigate to each video. Full scripts of each video can also be found in the appendices of this document (see appendices).

Figure 1: Bricolage Quilt Squares

Bricolage Quilt Square One: Taking Action

URL: https://youtu.be/vDzJKwAAQHM

Bricolage Quilt Square Two: Defining Research

URL: https://youtu.be/L-_PqeNSsqc

Bricolage Quilt Square Three: Defining Data

URL: https://youtu.be/XWnuxR9bkv8

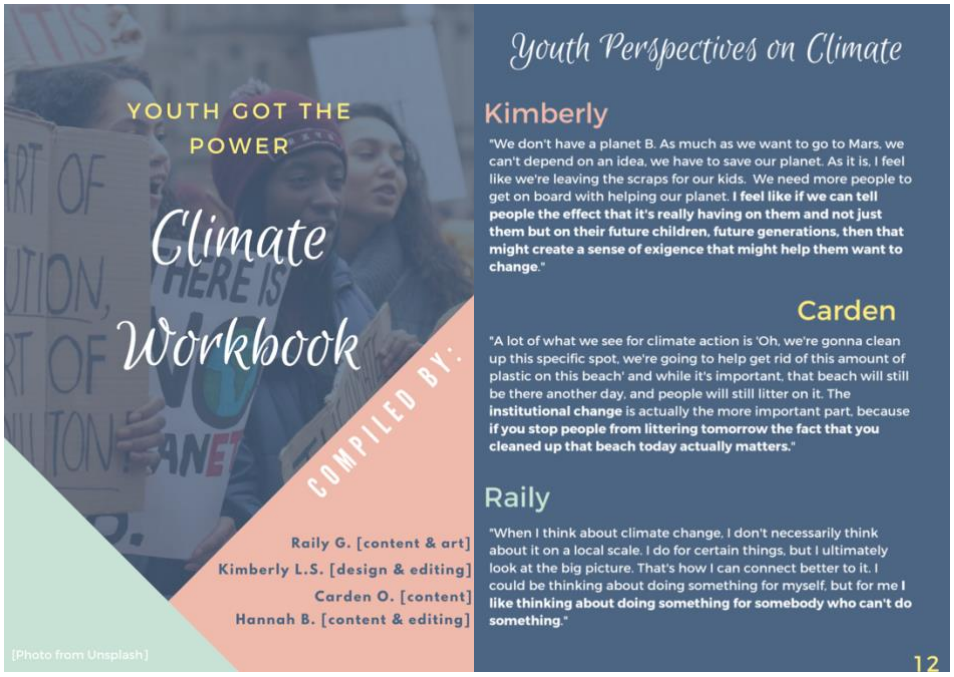
Bricolage Quilt Square Four: Researcher Roles

URL: https://youtu.be/zcgGptWq7Mw

Becoming Bricoleurs

When using bricolage, the researcher becomes a "bricoleur" responsible for piecing together and interpreting data as it emerges through the study. Denzin & Lincoln (1999) describe five different types of bricoleurs: interpretive, methodological, theoretical, political, and narrative. During data analysis, I embodied both the interpretive and political bricoleur through reflexively examining my position of power as the adult. By embracing an emergent design, multiple forms of data, and several theoretical perspectives (YPAR, youth development, bricolage) I became a theoretical/ methodological bricoleur. Finally, I became a narrative bricoleur through weaving together youth perspectives and reflections throughout the study alongside my own. During our action project planning process, youth also became bricoleurs by reflexively examining their roles as researchers, critically reflecting on past experiences with adults, and prioritizing an action project that could effectively combine each of their own unique passions and perspectives. Echoing the data emerging from the study, we pieced together quotes, stories, prompts, and art into a Youth Climate Workbook designed to guide and inspire other youth to take climate action (see figure 7). Our final act of inviting other youth to participate in a collaborative poetry activity was in itself a mini-bricolage; each line of the poem was contributed by a different individual which, when stitched together, became a continuous poem. In this way, bricolage moved beyond a methodological approach or way to analyze data, becoming a meaning-making tool for us to utilize in designing and implementing our action project (Levi-Strauss, 1966). A complete downloadable copy of the Youth Climate Workbook is available here: https://drive.google.com/file/d/14LvA44gX37P54jFoEscI5NNKhI-0hrlR/view?usp=sharing

Figure 7: Cover and sample page from the Youth Climate Workbook



Strengths, Limitations, and Areas for Future Research

The biggest limitation to this study was the timeframe I had to collect data. Without this constraint, it may have been possible to include youth in the creation of the research question and study design. I recommend that future YPAR-oriented studies with less time constraints aim to have youth participants involved in these stages of the research process.

An unexpected strength of this study was the small group size. While I initially thought this would prove to be a limitation of the study, four was an ideal number for everyone to feel comfortable participating, especially in the virtual space. Meeting virtually for planning sessions was beneficial in some ways, such as session timing flexibility (i.e., we were sometimes able to meet during a free period on a school day), eliminating the need to arrange travel plans, and easing concerns about meeting at an indoor location during COVID-19. However, virtual meetings did present some challenges for our planning process. For example, there were several instances where one or more participants chose to turn their camera off for all or part of our 90-minute session. This topic did come up in our group contract creation, and we decided to

encourage but not require everyone to turn their camera on. Even though participants without video were still periodically unmuting to share verbally, it did limit our ability to know if someone wanted to add a thought to the conversation or whether everyone was fully engaged in the planning process. One way I addressed this issue was by continuing to ask participants who were off video if they had anything to add to the conversation, especially if we had not heard from them in a while. Ultimately, planning our action project virtually was tempered by the fact that our action project was facilitated in-person. Future related research may benefit from conducting YPAR studies in the hybrid space, with some groupwork sessions happening in-person while others occur online.

Conclusion

Given the variety of settings, participants, and purposes for conducting YPAR, creating blanket frameworks that apply to every study would run against the emergent nature of this methodology. However, I found that this element of YPAR often results in literature lacking thorough explanations of methods and research process. While some amount of uncertainty is necessary, I would have benefited from hearing the candid experiences, advice and wisdom of other YPAR researchers. Thus, to conclude this article, I would like to provide a short summary list of "lessons learned" for current and future YPAR researchers based on my experience with this methodology. This list is not intended to be exhaustive, but rather a starting place for other researchers who will likely make adjustments and add new items to fit their specific contexts and group dynamics.

Lessons from Youth

1.) Leave ample unstructured time during sessions. While our sessions had a focused purpose, all youth participants in this study shared that having less structure was a positive aspect of the research experience that set it apart from other groupwork they had previously participated in.

    a. Instead of planning an itinerary of structured activities, adults can be prepared by providing/ suggesting tools (i.e., posters, craft supplies, maps, virtual whiteboard), helping youth navigate adult-centered spaces and permissions involved in the project (i.e., sending an e-mail to an adult stakeholder if youth have not gotten a response), offering project examples and resources (i.e., helpful websites, past projects, upcoming events, network of professionals), and gently bringing the group back to the purpose of their time together if they get sidetracked. These were all responsibilities that I took on during our planning sessions

2.) Cultivate space for laughter, tangents, creativity and joy during the research process. We planned an action project together, but we also told jokes, went on tangents, and embraced creativity. This was important to our research process because it helped us become more authentic with one another; it took the pressure off of feeling like we always had to be productive and emphasized the spontaneity and humanity in planning processes.

Lessons from Youth & Me

3.) YPAR studies are best conducted with groups of adults and youth that have an existing relationship, established trust, and shared interests. Consider working with a group you already have access to.

4.) In the early stages of the research study, adults should spend time considering how their own intentions, involvement and presence will impact youth participation. Cahill & Dadvand's (2018) p7 model, Hart's (1992) ladder of participation and Arunkumar et al.'s (2019) rope ladder are example frameworks for YPAR researchers to explore.

5.) Plan open-ended discussion prompts or activities (such as creating a group contract) to facilitate early on in the research process focused on defining research and group dynamics. These activities can help focus time together and build trust among group members. We created a group contract and answered prompts about research, group work and climate change.

6.) When it is time to narrow down project ideas, identifying the who (target audience) can help narrow down the where (event/ location), when (time and date), how (project) and why (the need the project addresses). Once youth identified that they wanted their project to impact other youth interested in climate change, the rest of the pieces fell into place.

7.) The cyclical nature of participatory process requires reflection periodically throughout, not just at the very end (Kemmis et al., 2014; Stringer, 1996). Researchers and participants can do this together and separately. We had time for independent and group reflection during each session.

    a. Adults new to the YPAR process can keep a reflexive journal throughout the research study to reflect on themes of power, collaboration, youth participation, etc.

8.) The process of YPAR is just as much, if not more important than the end product (Bettencourt, 2018). Our action project was a success because we spent ample time thinking, planning and reflecting on the process.

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APPENDICES

Appendix A: Bricolage Quilt Square One (Taking Action) Script

Slide One: Types of Data

The data for this study takes many forms, from video recordings and audio transcripts of group discussion to collaborative Jamboards, personal artwork, poetry, and journal entries. Jamboard is a collaborative platform that is similar to a virtual whiteboard or Google Slides. Using this tool allowed us to engage in multiple different forms of communication, including writing, drawing, and adding images, often interspersed with or followed by verbal conversation. You can see an example of how we used Jamboard during one of our groupwork sessions on the slide [play video of Jamboard].

Slide Two: Taking Action

Beginning with the end in mind, the first bricolage quilt square provides an overview of our final action project and a snapshot of our planning process. This broad summary provides helpful context with which to attach and build future quilt squares. In this section, I use narrative, quotes, images and a youth-authored poem to help visualize our action project.

Slide Three: Museum Photo

It's the morning of the Youth Climate Summit and there is an unusually warm February breeze mixing with excitement in the air. As Kimberly and I walk into the Museum, we are greeted by a welcoming hoard of teen leaders. Raily spots us right away and waves us over to the table where we can set up our action project materials. Carden joins us shortly after and we all shuffle into the courtyard to sign up for workshops. Sessions like "What is your Climate Superpower?" and "Raise some Noise for the Climate!" pique our interest as we discuss who will go to what session.

Slide Four: Jamboard Prompt

Several weeks before arriving at the Summit, Kimberly, Raily, Carden and I are nearing the end of a 90-minute group planning session on Zoom. We have just decided that we want to execute our action project at the upcoming Youth Climate Summit and are adding ideas to a brainstorming Jamboard (see figure 1). Each different color "sticky" note indicates a different person: Raily is yellow, Carden is orange, Kimberly is blue, and I (Hannah) am pink.

Once we have a chance to look over everyone's ideas, Raily and I discuss one of the post-its:

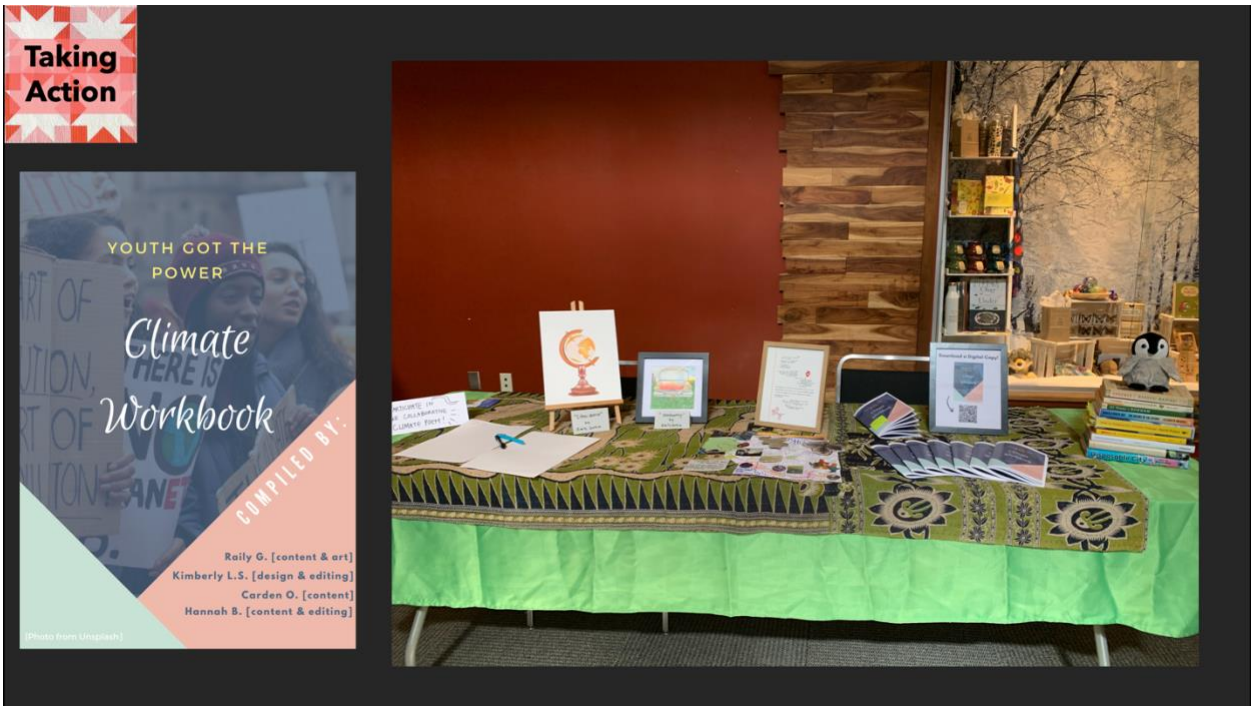
> Raily: I like whoever put to create an interactive workbook that can be distributed at the Summit, and putting in things like facts, maps, prompts and art ideas. . .because that makes me think, could we create a workbook full of information, ideeas to get people inspired about making a difference in climate change… I really like that idea"

> Hannah: Yeah, I think also that could be a potential place where all of these ideas could come together. Everything that's represented here could be tied into the workbook somehow. I remember Carden mentioning in a previous session how sometimes things can be combined, instead of having to choose one. Thinking of other ways we could do that might be interesting to consider to.

While the original idea to create an interactive workbook was my idea, we were able to incorporate aspects of everyone's ideas into the final workbook, indicated by symbols next to post-it notes. At least four of the ideas brought up during the brainstorm session were incorporated into our final project.

Building onto the concept of inspiring others, Kimberly shares her idea to facilitate a collaborative poetry activity. Ultimately, we decide to combine the workbook and the poem into one project by setting up a tabling booth at the Summit. During the remaining planning sessions, we wrote the first line of the collaborative poem and started gathering resources to add to the workbook.

Slide Five: Picture of our Table at the Summit & the Youth Climate Workbook



Back at the climate Summit, we finish up our zero-waste lunches at the Museum Café and head to our action project table in the main lobby.

As teens walk by, they admire Raily's climate art on display at the table and take one of the printed workbooks or scan the QR code for a digital copy. Kimberly invites her peers to add a line to the collaborative poem, several of whom deliberate with others near them about how they could rhyme the next line or capture something they learned during one of the morning workshops. At the end of the Summit, Kimberly offers to read the completed poem out loud to me.

Slide Six: Kimberly Reading Collaborative Poem (video)

> Getting warmer as we get older
> How will the planet keep its cool?
> The secret to ending climate change
> Isn't just a single tool
>
> Reduce, reuse, recycle,
> Ending climate change is vital
> Leave our trees be

They help us breathe

The world is bigger than we know
And there's still lots to discover
We have to do our part
To help the planet recover

We have to collaborate
Like we did with this poem
Don't be scarce with your passions, throw 'em
Keep your goals in mind and own them

Perceive, practice, and perfect for a sustainable world
Provide information and make tools accessible
To preserve our earth for generations to come
One effort can make a difference.

Appendix B: Bricolage Quilt Square Two (Defining Research) Script

Slide One: Defining Research

Since the action project planning sessions took place within the context of YPAR, it was important that youth have an opportunity to define what research was at the beginning of the study. In this section, one of our Jamboard prompts showcases one way I as the adult researcher attempted to yield power to youth.

Slide Two: Jamboard Slide

I attempted to challenge adultist ideas of research by asking youth to define this term in their own words. Upon youth participant's request, I also contributed my own definition after youth offered their responses. Sharing our own ideas and definitions about research became a leveling act as it allowed for youth to take part in shaping our research community.

Several threads of YPAR theory were present in our initial definitions of research, such as youth participation, youth co-creating knowledge, and research being a force for social

change. These contributions to our collective definition were significant because they highlight the ways our group was already thinking about research in new, expansive and non-traditional ways. However, phrases like “the study of”, “prove”, “factual data”, and “data collection” echo more traditional understandings of research that are taught in school and reinforced through popular culture and broader society, even in this study. Through navigating the overlaps and tensions between each of our definitions, we embarked on our first attempt at collective meaning-making.

Appendix C: Bricolage Quilt Square Three (Defining Data) Script

Slide One: Defining Data

Given the emergent nature of this study, data was not pre-determined and ended up taking many creative forms. This quilt square focuses on how we defined and generated data throughout the study, including our collaborative use of Jamboard to guide group discussion and youth's own data contributions centered around poetry and art.

Slide Two: Jamboard Prompts

Because of our existing group familiarity with Jamboard during the YES-Resilience program, this quickly became the main avenue for generating data and co-creating knowledge together. During our first groupwork session, I designed a series of Jamboard prompts for youth to consider past experiences and prior knowledge of research, group work, and decision-making. I drew inspiration for these prompts from the importance of building trust and acknowledging power dynamics in YPAR studies (Cammarota & Fine, 2010; Stieglitz & Levitan, 2021). On the slide you can see a list of the prompts that I asked during the first group work session:

- How would you define research?
- I function best in groups when. . .
- I like to contribute to group work in the following ways. . .
- In my experience, the biggest barriers to working together in a group include…
- Hannah can participate/ support the process by. . .

Significantly, these prompts initiated participant reflexivity as a part of the research process through having youth reflect both on their own potential contributions to action project planning and potential roles for me as the adult (Yang, 2015).

A tension that arose while writing these Jamboard prompts in preparation for the first session was whether I should respond to the questions, too. Before our first research session, I went back and forth about this several times. If I shared my answers, I worried that it would impact what the youth participants shared. However, if I chose not to share, I feared I would fall into a researcher-as-observer role which could potentially reinforce power dynamics between youth participants and me. Since adults need to step down in order for youth to step up during the YPAR process (Cammarota & Fine, 2010; Schuster & Timmermans, 2017) I ultimately decided to ask the youth what they wanted during the session.

Slide Three: Audio/ Text of Group Discussion

> Hannah: So, I have a question for you all. With these questions, would it be helpful if I facilitate, or if I also answer the questions?
>
> Carden: I would like if you also gave an answer, not to change anyone's mind or anything, but to also offer another perspective.
>
> Hannah: Awesome. Is everybody okay with me sharing?
>
> Raily: Oh yeah, I would love to see what you think.
>
> [Kimberly gives a thumbs up symbol]

Slide Four: Hart's Ladder of Participation

In this scenario, we were resting on the sixth rung on Hart's (1992) ladder of participation: adult initiated, shared decisions with children. While I initiated the ask, it was the youth participants who had the final say in whether I answered the prompts along with them. By asking, I signaled that I valued their opinion on the matter and did not wish to decide for them. From my perspective, their decision to include me indicated that they thought my responses were valuable additions to the discussion, and by association the data we were generating. In our last

session, while discussing what we wanted to include in the workbook we were designing for our action project, the topic of my participation came up again.

Slide Five: Audio/ Text of Group Discussion

> Raily: we can also write about our own experiences with climate change.
>
> Carden: Yeah.
>
> Hannah: I think that would be really cool, like sharing a climate story.
>
> Raily: We can also write about previous climate action projects, and plans that we have done previously. . . And Hannah, I think that you should do the climate action projects and your actual climate change experience [too], because I want to see what you have to say.

Slide Six: Hart's Ladder of Participation

The parallels between these two scenarios indicates that youth felt comfortable directing and making decisions because I had previously modeled this for them. This is consistent with other YPAR studies that focus on power sharing between youth and adults (Kennedy, 2019). Here, the roles of asking and deciding were reversed from the previous scenario, with Raily suggesting that I provide my stories and experiences in the workbook. This example rests on the seventh rung of Hart's (1992) ladder: child initiated and directed. In the first example, I asked participants for permission to join them as participant; in the second scenario, Raily invited me to join her as a researcher.

Slide Seven: Rope Ladder Model

These examples show how we fluidly moved between roles as researcher and participant during group discussion and decision-making. In this way, Hart's model of youth participation evolved into something resembling a rope ladder (Arunkumar et al., 2018) rather than a hierarchical model.

Slide Eight: Raily's Climate Art (Citrus World)

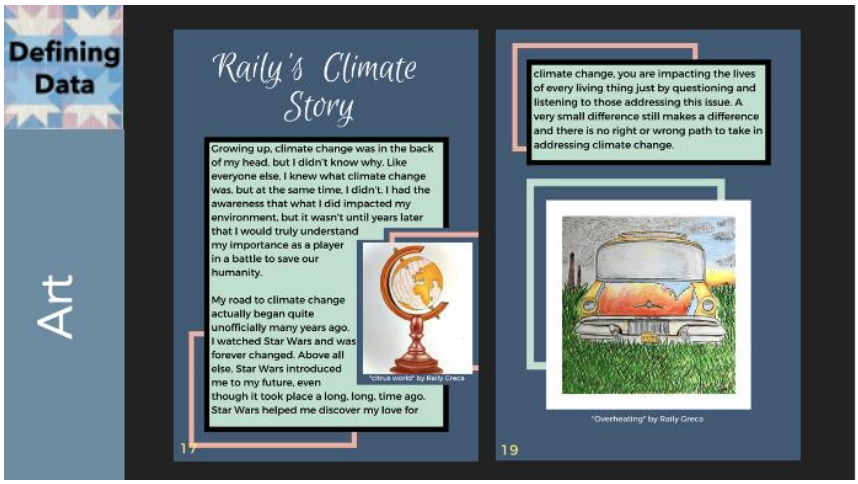
In addition to using Jamboard as a collaborative platform for data generation, youth took ownership of defining data during this study through the inclusion of poetry and art. During our third groupwork session, we were having a conversation about how we might be able to incorporate the themes or art and future generations into our action project and Raily took the opportunity to share some of her art with us.

> [Audioclip of Raily] "We were thinking about something related to art and something having to do with future generations. I showed Hannah this in an e-mail a couple of days ago, but I do climate change artwork and I want to show you guys. This is a globe and the planet earth is in orange."

Slide Nine: Raily's Climate Art (Overheating)

[Audioclip of Raily] “this one, the front of the car is a graph of what earth might be like in October 2090-2099. So, I just wantd to show people that.”

Slide Ten: Climate Action Workbook Pages (Raily’s Climate Story)



This was a significant act of vulnerability and is an example of how Raily asserted her agency, assuming the role of researcher. By sharing her artwork, she enriched data collection by adding a new form of data to explore. This act took on further significance when Raily offered to

incorporate her art into the Youth Climate Workbook alongside her personal climate story. She also displayed the original pieces at our table at the Climate Summit.

Slide Eleven: Kimberly Poetry Quote

Youth also contributed to data generation through incorporating collaborative poetry. This theme first came up when Kimberly shared an idea for our action project:

> [Audio clip of Kimberly]: "I did just think of this one thing, about a poem. . . I was thinking back on when we were with [climate change education program staff member] and we wrote this one poem collectively and everyone contributed a line. . . I know not everyone is really comfortable presenting or talking in front of an audience, but if it's a poem it's just one line. They can just think about what they want to convey and communicate and put that into that one line."

Again, this suggestion of an activity was a creative and powerful display of youth agency that ended up being a part of our final action project. It highlights how Kimberly prioritized collaboration and inclusion in her own role as researcher and ultimately as a bricoleur of individual lines of poetry fastened into a whole (Rogers, 2012). In this way, the cyclical and emergent nature of participatory research continued beyond the confines of our study into new spaces where youth were interacting with peers at the Climate Summit (Bettencourt, 2018; Cammarota & Fine, 2010).

Appendix D: Bricolage Quilt Square Four (Researcher Roles)

Slide One: Researcher Roles

In addition to each of us contributing to defining research and data, youth and I took part in data analysis through reflecting on our own roles, others' roles, and group process during the study. This quilt square includes two sections: reflection on researcher roles and reflecting on group process.

Slide Two: Jamboard Slide

We closed our time together during our sessions by answering the question, "How did you feel about your role in the research process so far? What do you want your role to be moving forward?" This was a way for us to reexamine each of our unique perspectives about research, how our understandings of research might have been evolving and how we were contributing to the action project planning process as researchers. It also provided an opportunity for youth to contribute to data analysis by self-analyzing their own roles as an individual and a member of the

group. This is also known as "participant reflexivity" and has been used in at least one other participatory study to expand the reflexive process to include everyone involved in the study (Yang, 2015, p. 448).

We start with audio clips of youth reflections.

Slide Three: Carden Quote

Carden shares about his contribution to the workbook and overall group dynamics.

> [audioclip of Carden]: The citizen science thing [for the workbook] started because I went on a tangent… I don't even know why I went on a citizen science tangent, I just did. And I definitely want to remember. . . it was a good environment and how a good small group should actually work. . . It didn't feel like anyone was talking over anyone else.

Slide Four: Kimberly Quote

Kimberly shares about her contribution to our action project:

> [Audioclip of Kimberly] I feel like I did something today since I actually spoke up at the end about my poem idea and I'm really excited that we're considering it [for the action project]"

Slide Five: Raily Quote

And Raily reflects on how this experience differs from other groups she's been a part of:

> [Audioclip of Raily] I really like my role so far because I feel like this is the first climate change program that I've been in. . . where I have been really able to express myself completely, like bring in in my artwork and all my other creative outlets. . . other things are more structured than this, so I felt like I had more leeway to be who I am.

Slide Six: Youth Reflexivity

Whether through expressing their creative side (Raily), offering up an idea that was incorporated into our action project (Kimberly) or taking on a facilitation/ leadership role during the session (Carden), each youth participant identified how they had a distinct yet equally vital contribution to our group planning. In this way, youth engaged in both "reflexivity as recognition of self" and "reflexivity in recognition of other" during our group reflections (Pillow, 2010,

p.181). Through examining interactions between themselves, others, and the research "situation" of planning an action project, youth were able to embrace their role as researchers while simultaneously co-creating understanding of the research process (Williams, 1990, p. 254). When braided together, each of their roles contributed positively to our group process and strengthened youth agency in the study (Arunkumar et al., 2018).

Slide Seven: Jamboard Slide

Some of ways youth outlined how I could participate or support indicate that youth saw me as a facilitator— my role was to "keep the group on track"/ "focus on the goal in mind", set rules, and provide encouragement. However, they also indicated specific ways I could utilize my positionality as the adult in the study to help with the action project planning (i.e., "providing contacts" and "open channels that aren't typically friendly to minors"). Kimberly even suggested an adjustment to how I presented my own role to the group, recommending that instead of

thinking of me as Amazon Alexa (there to answer questions and provide insight, but taking a backset in discussion) I could be called "Amazon Hannah". Giving youth this platform helped set the stage for future power sharing, permission asking, and merging of participant and researcher roles throughout the study.

During the action project planning process, I fulfilled these roles outlined by youth by providing contacts and resources for the project and keeping us on track with our planning. Youth also asked me to contact museum staff about doing our action project at the climate summit because they thought I would get a quicker response by using my authority as an adult. This was interesting to me considering we had one of the teen advisory board members on our research team who was meeting regularly with museum staff. Prior experiences getting ignored or dismissed by adults in other contexts may have contributed to their desire for me to send the initial e-mail.

Slide Eight: Hannah Journal Entry #1

I expect that there will be some reorienting/ growing pains during this session as we all adjust to a new way of interacting with one another. As someone who naturally likes to take the lead (and is used to filling that role with youth), it will be particularly important for me to embrace silence, actively listen, and let the youth decide when it's useful for me to jump in.

Before engaging with the youth participants, I critically considered my role as the adult researcher in the study. Many questions arose through this discernment process: Should I also answer open-ended prompts I designed for our first research session? What does it mean that I designed the research question and methods largely without youth input? Should I provide structure for the sessions, or leave them more open-ended? Should I think of myself as researcher, participant, educator, or some combination? Given the importance of sharing power

during a YPAR study and the existing power I had as their former educator, I ultimately landed on attempting to fulfill the role of Amazon Alexa: I was there to answer questions and provide resources or direction to youth if needed but was otherwise taking a backseat to the planning process. However, as the sessions continued, fulfilling this role proved difficult. I had to unlearn the familiar way I had interacted with youth previously as a leader and educator, and relearn new practices of listening, stepping back and making space. This process did not happen immediately, and there were times where I consciously had to hold my tongue and let conversations play out without my input. Especially during the first two groupwork sessions, I did take up a lot of conversational airspace responding to participant's thoughts, adding my perspective, and offering ideas.

Slide Nine: Hannah Journal Entry #2

I realized I am used to assuming that youth want to hear what I have to say without first asking if they'd rather focus on their own perspectives and responses. Practicing asking before sharing is an important part of this collaborative process and something that I as the ***adult participant*** *in the study need to continue doing.*

After our second group session, I wrote about my underlying assumptions contributing to the difficulty in unlearning prior behaviors. During this second reflection, I refer to my role as "adult participant." This transition from Amazon Alexa to active participant in the research process is an example of how my own thinking shifted as we began co-creating our action project. Defining my role in this way involved continuing to acknowledge my positionality as an "outsider" among youth participants in terms of age identity (Pillow, 2010).). By exploring and analyzing my own role, I realized that this study cannot be completely removed from the larger

social context in which it took place, where power dynamics between adults and youth are not usually recognized or named by the adults, much less actively challenged (Bell, 1995).

Slide Ten: Hannah Journal Entry #3

Recently, I've been wrestling with the tension between the parts of the study that I designed versus the action project planning which has been much more collaborative. I think being in this space is a part of the letting go, embracing the shifting power dynamics, attempting to de-adultify the research process.

Glenzer (2021) argues that transformational action research must create space both for the marginalized to exercise the power already within them and for dominant groups to practice distributing the power they possess. Thus, navigating power in YPAR studies involves researchers learning how to become participants alongside participants becoming researchers. Holding both researcher and participant roles was not a perfect process for me. There were times, such as defining the research question, when I took on the role as researcher without youth input. There were also times when youth wanted me to use my power as an adult researcher, such as when they asked me to e-mail the Youth Climate Summit coordinators for permission to distribute the Youth Climate Workbook during the event. These complex relationships between my own roles indicate that research collaboration between youth and adults is about recognizing and naming the power imbalances that exist; using power responsibly, thoughtfully and effectively; knowing when to step down or ask for permission; and most importantly, providing space for youth to actualize their own power (Kennedy, 2019). As I write in this journal entry, it is these tensions within the study that I believe are key to de-adultifying research. Adults must actively struggle with questions of power, roles and decision making when co-creating research with youth.

Slide Eleven: Group Dynamics

While youth and I spent time reflecting on our own roles within the research process, these roles also took on meaning within the context of the larger group. During our final session, youth identified aspects of our group process that contributed to the positive group dynamic between members.

The loose structure, free flow of conversation/ exchange of ideas, small group dynamic, and having less of an adult-led focus were all aspects youth identified that contributed to the positive group dynamic during our planning sessions. These qualities of our group process align with successful youth adult partnership actions identified by the Search Institute such as “listen,” “respect me,” “include me,” “let me lead,” “collaborate,” and “connect”. Significantly, all of the youth participants identified aspects of this study that were different than other programs or interactions they had with adults. This indicates a need for more youth development professionals, educators, and other adults who interact with youth regularly to invest in building youth-adult partnerships which give young people more space to lead, speak, create, and be themselves.