"ANOTHER HAITI STARTING FROM THE YOUTH": INTEGRATING THE ARTS AND SCIENCES FOR EMPOWERING YOUTH CLIMATE JUSTICE ACTION IN JACMEL, HAITI

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Despite being on the front lines of climate catastrophe, the voices and actions of critically affected groups are often overlooked. The present research partnered with Haitian youth—who are marginalized from climate decision-making on the basis of nationality and age—to explore and address sustainability challenges in their coastal community. Specifically, this study explored processes of individual and collective empowerment made possible through a community-based arts center course that integrated the arts and sciences to position youth as change agents for a more sustainable Haiti. Through interviews conducted with arts center staff and students, we found that the arts were critical in facilitating collective empowerment, particularly towards resisting and rewriting dominant cultural narratives that marginalize Haiti on the world stage and marginalize youth as critical actors for sustainability in their communities. Moreover, we found that integrating the arts and sciences had the potential to empower individual youth by supporting their critical awareness of environmental problems, their capacity to communicate with adults—including decision-makers—and by encouraging their active participation in transforming their communities. Findings of the present study have implications for youth-centered educational programs, collaborative research, and community organizing for intergenerational and climate justice.

Keywords: arts, climate justice, participatory action research, sustainability, water, youth.

1. Introduction

Central to the argument for climate justice is the fact that the world's poorest countries—those that have historically contributed the least to the problem of climate change—are more vulnerable to its consequences (Schlosberg & Collins, 2014). In particular, small island nations such as Haiti are widely considered to be among the most vulnerable (UNESCO, 2020). In addition to facing greater exposure to the direct impacts of climate change (e.g., sea level rise), such countries are also highly sensitive to the indirect impacts of climate change. In Haiti, existing environmental stresses—such as fragile ecosystems, deforestation, and limited water resources—will be made worse under a changing climate (Slagle & Rubenstein, 2012). Intersecting with these geophysical vulnerabilities are economic and sociopolitical factors such as limited financial resources and political instability, which exacerbate climate change threats and limit adaptive capacity.

Beyond nation-level disparities, a climate justice lens highlights the disproportionality of risks faced by certain groups within countries. The ability of populations to mitigate and adapt to climate change is heavily influenced by factors such as income, gender, race, class, and political

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representation (Christian-Smith et al., 2012). For example, in the U.S., poor communities and communities of color face greater social vulnerability to climate change risks (Black Congressional Caucus, 2004). Additionally, around the globe, the youngest and oldest members of society face greater physical vulnerability to climate change impacts (Watts et al., 2019). To ensure a fair and just transition towards sustainability, climate justice demands the active participation of marginalized groups in decision-making and action for societal change (Robinson & Shine, 2018).

Despite being on the front lines of climate catastrophe, the voices and actions of critically affected groups, within and across countries, are often overlooked. Moreover, despite being key stakeholders in efforts to address sustainability challenges, their perspectives and experiences are underrepresented in climate change research. Community psychologists have a key role to play in addressing these important gaps. A climate justice agenda calls for solidarity-focused research to understand and address climate change risks and vulnerabilities in ways that center the views and specific needs of marginalized groups.[1] In other words, climate justice research requires an empowerment perspective, where "empowerment is viewed as a process: the mechanism by which people, organizations, and communities gain mastery over their lives" (Rappaport, 1984, p. 3). The present research was based on a university-community partnership that aimed to position children and youth as agents of change towards sustainability in their coastal community in Jacmel, Haiti. Using the arts and sciences as platforms for engagement, young Haitians gained critical awareness of local sustainability challenges and took collaborative action within their community. The present research explores the processes of individual and collective empowerment made possible through youth-centered engagement.

1.1   *Haitian youth: Multiply marginalized in the face of climate change*

Known internationally as the arts and cultural capital of Haiti, the southern port city of Jacmel has a long-standing history of local activism and community organizing to address a variety of social and ecological issues (Pluim, 2017; Turgeon & Divers, 2011). Among the region's chief challenges is limited water and sanitation accessibility, amplified by climate change (Martinez, 2019). The nation's postcolonial history and neoliberal policies (i.e., austerity measures) are among the reasons that, despite decades of improvement efforts, Haiti has one of the least developed water and sanitation infrastructures in the world (Gelting et al., 2013).[2] Due to the

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[1] Solidarity has been defined as "unity (as of a group or class) that produces or is based on community of interests, objectives, and standards" (Solidarity, n.d.). In global health research, it has been argued that solidarity "between researchers and communities provides both an ethical underpinning, and an ethical goal, for community engagement" (Wright & Sheather, 2020, p. 4 [emphasis added]; see also Pratt, Cheah, & Marsh, 2020). We agree with Wright and colleagues (2020) that, in doing community-engaged research anchored in an ethic of solidarity, "engagement needs to start from a deep commitment to the value of local knowledge and experience" as well as "to the local historical context. Such knowledge is essential in order to ensure that the research meets actual needs and is conducted in ways that are sensitive and respectful" (p. 5).

[2] In Haiti, the role of government in water and sanitation services is limited (Gelting et al., 2013). In Jacmel, government presence in the realm of water infrastructure and sanitation is solely in the form of several public water treatment facilities that provide minimal passive filtration of natural springs, surface water flows, or well water, and that are available to residents from open air spigots, ponds, or troughs. There is no municipal or department level water infrastructure to speak of in the Jacmel area. The national government has, in the past, provided various informational and technical planning resources to citizens (e.g., guides on how to build latrines, how to minimize contamination from waste water or septic tanks, etc.), but direct action or support is seldom available. Postcolonial and neoliberal

limited capacity of the national government to provide reliable water and sanitation services, many of these efforts are externally-driven and top-down in nature. As such, they tend to overlook an essential element to such reform: community participation. Specifically, despite a history of community-led initiatives (Pluim, 2017), Haitian residents, young and old, have often been excluded from decision-making and project implementation processes (Faedi Duramy, 2015), contributing to the inadequacy of such ventures. Greater involvement of Haitian communities is critical to realizing a climate justice research agenda that centers the perspectives and experiences of groups facing greater risks under a changing climate.

The term 'climate justice' first appeared in the academic literature not in reference to vulnerable countries, but in the context of intergenerational justice (Weiss, 1989). At the core of intergenerational justice is the idea that "present generations have certain duties towards future generations" (UNICEF, 2020). Under a changing climate, these duties are guided by the concept of sustainability, defined as "meet[ing] the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 53). Young Haitians face disproportionate climate-related risks for two reasons. First, relative to adults, they are physically more vulnerable to the health-related risks of climate change, including hunger and malnutrition, water-borne diseases, and respiratory conditions (Menke & Schleussner, 2019). Second, their lifetime exposure to climate change is longer in duration than older generations, meaning they stand to endure its consequences for a greater proportion of their lives (Weiss, 1989). Beyond immediate health consequences, climate change increases the likelihood that children will face displacement, poverty, mental illness, loss of cultural heritage, and conditions of increased violent conflict (Menke & Schleussner, 2019; Watts et al., 2019).

Haitian children and youth are multiply marginalized in the face of climate change threats. As Haitians, their specific needs are overlooked relative to rich countries. As youth, their active participation in decision-making and action is implicitly and explicitly discouraged in both public and private domains (Faedi Duramy, 2015). In one of very few studies to explore children's participation in Haiti, Faedi Duramy (2015) concluded that, "cultural norms of authority, obedience, and respect prevent children from speaking up and voicing their opinions or concerns" (Faedi Duramy, 2015, p. 448). Despite their status as key stakeholders in the fight to address climate change, children and youth—like other marginalized groups—are often not invited to participate in decisions and actions that will affect their lives. Moreover, despite increasingly integrated and inclusive climate change research agendas, largely missing from the climate change literature are studies that partner with youth as agents of sustainable transformation within their communities—particularly in small island nations such as Haiti (Mitchell et al., 2008; Stratford & Low, 2015).

1.2   *Collaborating with Haitian youth to address sustainability challenges*

Given the overwhelming nature of climate change threats, there is a need for empowering engagement strategies that strengthen young people's awareness, agency, and action around sustainability challenges (Bandura & Cherry, 2019). Most research about youth climate change engagement emphasizes student learning over action and focuses on the scientific and

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policies (e.g., austerity measures) have left the Haitian government largely incapable of providing water services to its citizens.

technological dimensions of climate change over its social and political dimensions (Rousell & Cutter-Mackenzie-Knowles, 2020). Towards generating alternative, solidarity-focused engagement strategies that support young people's constructive climate change engagement, there is a need for 'bottom up' pedagogies that encourage learners to engage with sustainability challenges in ways that are meaningful and motivating for them (Trott, 2019; Tejada, Nisle, & Jenson, 2020). In a recent systematic review of the literature on climate change educational approaches, Rousell and Cutter-Mackenzie-Knowles (2020) highlighted a particular need for participatory and arts-based engagement models that give "young people both a hand and a voice in redressing the complex implications of climate change *in their own communities* and environments" (p. 13 [emphasis added]).

There is growing recognition that the arts can play a critical role in cultivating constructive climate change engagement among young people. For example, integrating the arts and sciences in sustainability education has been found to support young people's sustainability learning, while enabling their role as agents of change in their communities (Trott, Even & Frame, 2020). A growing body of research exploring the role of the arts in youth climate change engagement has found arts-based approaches to support feelings of agency and empowerment (Trott, 2019; Benz & O'Brien, 2019). For example, Doyle (2020) found that "creative and participatory approaches encouraged [young people's] sociocultural and emotional engagements with climate change," which in turn promoted their "feelings of efficacy" (p. 2749). Moreover, the arts can serve to deepen youths' climate change engagement by facilitating their critical thinking and meaning-making, generating images and metaphors, and invigorating imaginative solutions and youth-led actions (Trott, Even & Frame, 2020; Benz, 2020; Benz & O'Brien, 2019). Despite these encouraging findings, creative and participatory engagement models "remain relatively untouched resources" for youth climate change engagement compared to top-down, science-focused models (Rousell & Cutter-Mackenzie-Knowles, 2020, p. 13). Beyond the need for exemplars of alternative engagement strategies, there is also a need for research exploring whether and how they are empowering to young people.

The present research is based on a three-year university-community partnership—between an interdisciplinary U.S. research team and a community arts organization in Southern Haiti—that co-developed and delivered integrated art-science programming aimed to position Haitian youth as agents of change in their communities. Through interviews with arts center staff and students, this article explores the role of the arts in the process of reclaiming power in the face of climate change, as well as how youth were empowered in this context. In the present study, empowerment is defined as, "the capacity of individuals, groups and/or communities to take control of their circumstances, exercise power and achieve their own goals," as well as "the process by which, *individually and collectively*, they are able to help themselves and others to maximize the quality of their lives" (Adams, 2008, p. xvi [emphasis added]). Following these definitions, in the present study, empowerment is conceptualized both as a process (i.e., an ongoing series of events unfolding over time; Trott, in press) as well as "the life and outlook-changing outcome of such a process" for individual young people and their climate-affected communities (Perkins, 2010). Moreover, youth empowerment, in this context, is seen as a mechanism by which young people may "gain and apply the actual power needed to make important, material improvements in community conditions and [their own] lives," addressing the climate crisis in locally meaningful ways (Perkins, 2010, p. 207). Analyses were guided by two main research questions related to processes of empowerment among Haitian youth.

1. How did the arts facilitate collective empowerment among Haitian youth?
2. How did the course promote individual youth empowerment?

2. Method

2.1   *Community partner*

Jakmel Ekspresyon (JE) is a community-based arts center located in Jacmel, Haiti, which prides itself as a hub for the arts and a space of non-discrimination. Often integrating science and technology with the arts, its programming aims to "elevate the voice of the average Haitian" (JE, 2020). This research is part of an ongoing partnership initiated when JE's Director (Frame) enlisted the first author (Trott) to collaborate in the support of the arts-based science integrated course. JE took the lead in designing and implementing programming, while the U.S.-based researchers supported program development by contributing: (a) ideas about program content and format; and (b) resources such as program materials and relevant research. The protocol of this study was approved by the institutional review board of the partnered university and all participation was voluntary.

2.2   *Program description*

This paper focuses on interviews conducted following two cycles of a JE course called "Photo-Environment," which was designed by and for youths and young adults in Jacmel. The course combined the arts (i.e., photography) with the sciences (i.e., environment), and focused on water security challenges in the Sud-Est (southeast) Department of Haiti. The photography component of the course was based on photovoice, a participatory action research (PAR) methodology, which puts cameras into the hands of participants to document problems and solutions from their point-of-view (see Figure 1; Wang & Burris, 1997). As a PAR method, photovoice centers the voices and actions of those most affected by social and environmental problems and aims to change the situation for the better. During both cycles of the course, staff and students took photo excursions to key water sites (see Figure 2) to document conditions and to capture the beauty and challenges of the region (see Figure 3). The science component of the course consisted of: (a) learning about hydrology and water management, particularly related to contamination risks and climate change threats; and (b) collecting water samples and analyzing water quality from each local site (see Figure 4). Both cycles of the course ended with a community event that doubled as a graduation ceremony and photo gallery exhibition featuring students' photographs and the results of water-testing analyses. During the exhibition, students discussed the content and meaning of their photographs with attendees, which included local residents and decision-makers. The exhibition also featured documentary films co-produced by JE students and staff, which elucidated problems identified during each course. Cycle 1 of the Photo-Environment course focused on the themes of water and local pollution (i.e., refuse commonly seen contaminating water sources) while Cycle 2 focused on the relationship between water and deforestation. Although the instructors chose the theme of water, the students chose the intersecting second themes (pollution and deforestation) and led the way in generating the artistic content that served to interpret and communicate these

linkages. The goals of each course were to facilitate students' critical awareness, leadership skills, and participation in collaborative, community-based action for sustainability.

2.3   *Participants*

Across Cycles 1 and 2, 21 students (12 female; 9 male) participated in the course. Cycle 1 ran for 15 weeks (1 session weekly) in the fall of 2017 and engaged 13 students (7 female; 6 male) ages eight to 17. Cycle 2 ran for eight weeks (2-3 sessions weekly) in the summer of 2018 and engaged eight students (5 female; 3 male)—six youth (ages 12 to 18) and two adults. The adults were a married couple in their thirties who were both teachers in a local school. All students in the course were Haitians of primarily African descent who were residents of Jacmel. All students participated voluntarily and no one who wanted to participate in the course was excluded. The participation of two adults in Cycle 2 was an inclusive response to requests by older members of the JE community who were attracted to the class following Cycle 1. The Cycle 1 group was larger than the Cycle 2 group in part because participants were provided transportation to JE in the first cycle but not the second cycle. Also, Cycle 2 took place during the summer, whereas Cycle 1 took place during the academic year. A third cycle is planned (see Figure 3).

Participants in this interview study consisted of five JE students from Cycle 1 (4 female; ages 8 to 17) and all four JE staff members who were directly involved in the Photo-Environment course, including the Founder and Director of JE, the Assistant Director, and the two instructors of the Photo-Environment course (i.e., an environment educator and a photography educator). In Haiti, it is typical for students to graduate from high school in their early- to mid-twenties and to graduate from college in their late-twenties to early-thirties. Except for JE's Director, the JE staff interviewed for this study were young Jacmel residents. The Assistant Director was in his early thirties and the two instructors were in their twenties.

JE courses are made possible by the involvement of volunteers and paid staff. While the Assistant Director volunteered his time for the Photo-Environment course, the JE instructors interviewed for this study were paid employees who were previously students and/or volunteers for JE. Each staff member brought their own expertise to the project: The Assistant Director—a documentary filmmaker with interest and knowledge of the region's water challenges—had previously designed and managed JE courses and served the Photo-Environment course in a managerial capacity. The two instructors of the course held expertise in their teaching area: the photography instructor was a professionally-trained photographer, and the environmental educator studied climate change. To supplement staff member expertise, the U.S. researchers provided ideas on program format (e.g., based on PAR), and program resources perceived to be relevant to the project. For example, staff were provided with various scholarly resources in English and French related to water education—especially regarding water contamination from human and environmental sources, information about pathogens—especially Cholera, which is known to be an issue in the region, and other scholarly articles and reports about water in Haiti. Our project did not have any particular infrastructural or other concrete water issue solution in mind at its outset. Rather, we sought to provide information on a variety of available approaches that might apply to the problems local participants were concerned with, so that they might pursue addressing these issues with an understanding of the range of adaptation options that might be utilized or built upon.

2.4 Data sources and analysis procedures

To explore JE staff and student experiences, semi-structured interviews were conducted in the spring of 2019. Student interviews explored how the course influenced students' awareness and action around environmental challenges. Staff interviews explored, (a) their roles and involvement with JE; (b) their views and perspectives on both cycles of the Photo-Environment course, including challenges and successes, key milestones, memorable moments, and outcomes; (c) how they personally experienced the course; (d) what they viewed as the impact of the course on students; and (e) the future of the course, including their suggested improvements. One interview was conducted in English (by Even) with JE's Director via a combination of video conferencing and telephone conversations. All other interviews were conducted face-to-face at JE (in Jacmel) by the JE Director in Haitian Creole and were later transcribed and translated into English by other, non-participating JE staff. Student interviews were shorter on average ($M = 25$ minutes) than staff interviews ($M = 40$ minutes) in part because staff were asked questions about the Photo-Environment class (Cycles 1 and 2) as well as about JE as a whole. Verbatim transcriptions were used for analysis.

The four-person coding team consisted of three graduate students and one faculty member. Transcriptions were thematically analyzed following a multi-stage process (Braun & Clarke, 2006). First, all coders independently familiarized themselves with the context of the program and all nine transcripts. Then, all coders reviewed a subset of student transcriptions and identified textual segments relevant to a set of preliminary research questions related to what students learned in the course and how the program supported their knowledge and action. Later, all staff transcripts were read in their entirety by the full coding team before generating an initial set of coding categories. After the initial coding, each staff transcript was coded by two members of the research team to identify textual segments related to a final set of major themes addressing this study's research questions. Lastly, we collectively redefined and organized the themes to produce the report. Throughout this process, the full coding team met regularly to discuss coding with direct reference to the data. Trustworthiness was ensured in this thematic analysis by having a four-member coding team who coded each transcript independently, then reached agreement on coding decisions during team meetings (Guba, 1981). Additionally, themes were reviewed by JE staff to check the accuracy of interpretations.

3. Results

Findings are organized into two major sections aligning with this study's research questions. Within each section, themes and sub-themes are indicated in bold, described narratively, and supplemented with illustrative quotations from JE students and staff.

3.1 Collective empowerment through the arts

This study's first research question explored the process by which Haitian citizens—especially children and youth—are able to reclaim power through the arts. In this study, collective empowerment is defined as the capacity for groups or communities to take control of their own affairs, achieve goals, and improve their lives (Adams, 2008). Through the Photo-Environment

course, JE staff and students utilized the arts (e.g., photography; film) as messaging tools, reaching wide audiences and resisting dominant narratives of Haiti and youth alike. In doing so, Haitian youth were reclaiming their power, creating alternative narratives of their communities and peers, and acting as agents of environmental and social change.

Resisting dominant narratives: Sending a message

In this study, dominant narratives refer to prevalent stories, images, and descriptions of people and places, which lead to widely held perceptions and assumptions about entire populations. For example, within Haitian society, dominant narratives exist around the role of children and youth in society. Like many Western societies, Haitian culture views children and youth not as competent societal actors, but as undergoing a period of preparation for the 'full citizenship' that comes with adulthood. Dominant narratives such as these have real-world implications. In the case of young Haitians, dominant narratives about their limited role in public life often leave children and youth without a voice in matters that are important to their lives. There are also dominant narratives about Haitian society as a whole. Often taking the form of stereotypes emanating from outside the country, these narratives tend to emphasize the region's deficits (e.g., poverty) while neglecting its strengths (e.g., arts and culture). As marginalized groups reclaim their power in the face of climate change, these dominant, disempowering narratives must be resisted and rewritten. During interviews, the arts were described as central to this process.

Redefining "youth" in Haitian society. For young Haitians, taking an active role in public life is often discouraged. Youth are rarely depicted as leaders within their communities and they are often excluded from community organizing and advocacy efforts. As JE's Director explained, "[Youth] are not supposed to challenge [authority] at all. They're not supposed to challenge ideas. They're supposed to take what they're given and grow with it." Beyond the expectation that youth are deferential to adults in Haitian society, there was also a perception that power holders were not acting with the best interests of young people in mind. During interviews, the arts were described as a way to challenge these realities. According to the photography educator, "Haiti is a country where politics are mistreating people. Politics do not value youth, so it is through photography we can talk."

Within and beyond the Photo-Environment course, JE's programming emphasizes youths' capabilities to act as change agents within their communities. As the Director explained, "My main thing is just give the students the information, the experience that they need...and let them run with it." By allowing youth to lead initiatives and by creating a program infrastructure based on the value of every voice—no matter the age—the arts center provided opportunities for youth to thrive, lead, and educate others. As the Director explained, "We are a space of nondiscrimination which includes ageism… One really beautiful part of our [JE] community is that nobody disrespects somebody else's idea… You have older people and younger people sharing ideas and respecting each other." The environment educator noted the power of film to challenge dominant narratives of youths' limited capabilities, saying, "Through the video, the kids say everything. I do not need to say anything as a teacher." As others explained,

It [is] a pride for me to collaborate with a space of nondiscrimination that valorizes youth; that valorizes Haiti. It is the first among the youth [spaces] that I have seen, and [I] feel satisfied because there is no discrimination. – Photography Educator

[The students] were the ones who manipulated the cameras doing the shooting. They were also the actors in the video to talk about existing problems. I really appreciated that.   Everything we [planned] …it was [the youth] who did it. We were just assisting them. – Assistant Director

Through youth-centered programming, JE provided a platform for young people to engage in critical dialogue—about community strengths and concerns—from which they are traditionally excluded.

...Young children learned that they can use their creative voice—or use [their voice] through creative methods—to elevate that in their community and actually take part in dialogue, where before, they were just some kid who was there to just learn. – Founder/Director

The Photo-Environment course offered a pathway for young people—JE staff and students— to engage with a topic they felt passionate about. Moreover, the arts provided an opening towards creating an alternative narrative of youth in Haitian society, emphasizing their role as competent communicators and critical societal actors. This alternative narrative depicts youth as community leaders and agents of environmental and social change who are capable of envisioning and acting towards a better, more sustainable future for their communities.

We asked [youth] questions on the photos we took, and they suggested what should be done according to them...Some kids [said] they want their environment to be clean, to have no trash, and the town should place trashcans everywhere and come for trash every other day. – Environment Educator

The creative arts were also considered to be valuable tools in redefining "youth" within and outside Haitian society, refocusing the image on their strengths and community involvement. JE's Director explained, "You see a lot of strong youth who are interested in their environment and their community… I think that's so strong internationally."

Redefining "Haiti" for a global audience. Another way in which young Haitians were able to reclaim power through the arts was by challenging dominant narratives of their country to an international audience. Dominant narratives of Haiti accentuate suffering, degradation, and external reliance while overlooking community strengths. During interviews, JE's Director spoke of the deficit-dominated approach often visible in narratives of Haiti. "Taking pictures [in Haiti] is hard because a lot of people take pictures of just the bad stuff and then share that." She went on to discuss the larger challenges of such narrow depictions, saying, "If you just show depression and issues that are unsurmountable, then that's not really empowering."

To counter this, the arts were seen as a way of redefining "Haiti" for a global audience, while positioning children and youth as change-makers. By disseminating alternative, more nuanced— and accurate—depictions of Haiti, young people were providing important information while communicating about the strengths and needs for improvement within their communities. Importantly, "by using photographs and sharing them [on social media] and being able to put comments underneath them, [Haitian youth] are no longer beholden just to the big box media provider for information on Haiti." As the Director went on to explain,

The kids and students are motivated to show the strength of Haiti as well as the problems so that they can educate… Being able to give these students cameras and saying, "Choose your own image," and they really choose these beautiful images of Haiti … that include the problems.

The arts as a powerful voice: Reaching a wide audience

While the arts were described by JE staff as a 'means' to resist and rewrite dominant narratives that marginalize youth in Haitian society and marginalize Haiti in global society, their real power was in reaching and influencing a wide audience, including government actors, Haitian citizens, and global society. By proliferating alternative viewpoints through creative mediums, the arts were seen as a way to create messages and symbols capable of communicating across languages, communities, and countries. Generating such images allowed Haitian youth to leverage their power to activate change within their communities. As staff and students worked together to address local sustainability challenges (e.g., water security, pollution, deforestation), they mobilized the arts in the service of social and environmental justice.

Reaching power holders. When asked to describe the most important topic discussed during her interview, a teenage JE student emphasized the role of government action in responding to sustainability challenges. As she explained,

> The most important thing is for the government to do something about how the people are living by the river because it is not good. The government must help them, remove the trash … [away from] the river or the sea because when it goes to the sea, the animals that are in the sea will eat it and die. – Female Student (Age 17)

During interviews, the arts-based environmental programming was described as a way to both communicate to and exert pressure on power holders. Specifically, the Photo-Environment course sought to educate and position youth as environmental messengers and advocates for a sustainable future.

> The objective was to make the kids know and protect their environment. To protect it with their cry. That means, through projects to increase public awareness… they bring many key messages that will allow the population, even the government, to take [responsibility] to protect the environment. – Environment Educator

The youth-led photography exhibition offered a platform for young people to communicate their concerns with decision-makers in the community. As JE's environment educator recounted, "Many people would come to the [photography] exhibition, even authorities. …They asked questions about the photos...and [the youth] explained questions concerning their photos." The arts were described as an advocacy tool used by young people to depict their realities and demand change—directly through face-to-face interactions and indirectly through social media platforms.

> ...Through photography, the students take pictures, videos, and publish them on social media. The public will see what is happening. The government, senators, mayors, and deputies will see these images. That could push the government to meet its obligation

toward the society. – Photography Educator

Reaching Haitian citizens. Beyond making demands of power holders, JE staff and students mobilized the arts to raise awareness among fellow Haitian citizens. JE educators expressed confidence in the efficacy of JE programming to educate Haitian community members about environmental issues. By educating the youth, the youth became educators themselves. Beyond awareness-raising, JE educators hoped knowledge would translate into action.

> ...People would come to the exhibition and get more people sensitized on that matter. If someone used to throw trash on the streets, and he came to the exhibition and saw that … it will have an impact on his health, he will not continue throwing trash on the street anymore. – Environment Educator

In addition to photography and film, the exhibition featured theater and music performed by the students. These arts-based components were further supplemented with the results of local water-testing conducted by JE students and staff. During interviews, JE staff anticipated ripple effects throughout the community resulting from their efforts. As the environment educator put it, "[Information regarding water quality] will make a lot of vibration in the community." The Director told of the profound impact of the exhibition on an educator in a local school,

> [One student] gave a presentation of what they learned ... [and another] of the younger kids decided to do musical interlude on a flute or a little recorder. Just ripped your heart out... I definitely had one person who is in one of the nonprofit schools here … say to me, "This is the first time that I actually feel hope for the kids." … This vision, this view, and this knowledge that these kids gave of water and pollution...it's really got an impact on this person and most of the people that went to the gallery.

Reaching a global audience. The transformative potential of the arts, as a means by which Haitian youth are able to resist and rewrite dominant narratives, extends beyond national borders. JE youths' art, channeled through globally accessible means such as social media, has the potential to speak to an international audience. In doing so, dominant narratives can be challenged, displaying the strengths, organizing, and action occurring within Haitian communities. As one example of JE's global reach, a single social media post describing the Photo-Environment course (i.e., as "teaching about pollution and how to tell a story through the lens of a camera") and its collaborative nature ("a wonderful partnership") as well as recognizing the youths' accomplishments ("we are super proud of the kids' hard work") and announcing the Cycle 1 exhibition ("wish you could all be in Haiti to see the exhibition") engaged 62 people from around the world—most in Haiti and the continental U.S. but also in the Dominican Republic, Puerto Rico, China, Taiwan, the United Kingdom, Japan, and Australia. As JE's Director explained, "[Youth] can reach a lot of people even using simple tools like their Facebook page and a camera." In this way, JE youth were able to demonstrate their leadership and action, shaping a narrative of youth as environmental and social change leaders. During interviews, staff highlighted the role of the documentary in deepening the public's environmental knowledge and disseminating accurate depictions of Haiti.

> ...We have made a documentary concerning water people are consuming, we used

photography, and the video will be available on the internet. Thousands of illiterate people who do not know how to protect the environment will be reached. – Photography Educator

Being able to see the documentary, not only in-country but out-of-country, draws a strong Haitian community, [and] shows a strong image that needs partnership, not guardianship, which is what you don't see from a lot of organizations. – Founder/Director

3.2   Youth empowerment for transformative change

This study's second research question explored how youth were empowered through both the artistic and scientific activities they were engaged in throughout the Photo-Environment course. For this research question, we conceptualized the empowerment process as taking place on a more personal level, whereby youth—as individuals—were exercising their power and taking action to improve their situation (Adams, 2008). Through art and science, youth were encouraged to explore their own voices and express what they thought about their discoveries. Through immersive, hands-on activities that allowed them to collect and analyze their own data, students were challenged to think critically about the contradictions between commonplace assumptions and the truth that they uncovered. They also explored possible solutions to the problems they found and took multiple opportunities in the classroom and in the community to exercise their leadership skills in advocating for the environment. During class outings, students interacted with the community, and during their exhibition they engaged in advocacy and awareness-raising around local environmental problems with several parties, including non-profits, local leaders, and other youth.

Youth awareness: Art-science integration for critical thinking
The Photo-Environment course, and JE programming more generally, emphasizes 'bottom-up' rather than 'top-down' processes. This is evident both in the participatory approach taken to student learning as well as the youth-led nature of course outcomes (e.g., exhibition). Before youth can affect grassroots societal change, however, awareness is key. Through the Photo-Environment course, students used art and science to critically examine and become sensitized to local environmental challenges.

Thinking critically: Beyond memorization. In formal schools around JE, students are not accustomed to learning science via lab experimentation. Rather, much teaching and learning is focused on repetition and rote memorization. Among the motivations for offering the Photo-Environment course was to address this perceived need and support students' critical thinking skills. According to JE's Director, students are mainly exposed to "…theory in science in a lot of schools, but .... they have no labs. So, we wanted to bring in a class that gives young people the opportunity to go and be able to do some hands-on experiments." According to the environment educator, local youth also do not have classes focused on environmentalism or sustainability. "They have science, history and other classes but … not [an] environmental education class." The Photo-Environment course, designed by older Jacmel youth, was created to fill these gaps in experiential learning, and in particular, to explore the water contamination situation. As the

environment educator explained, the course "allows the kids ... to know how to protect their health in regard to what they are consuming." A main goal of the course was to support youths' capabilities to think for themselves.

> Most classes are like, "I'm going to give you the information and you're going to repeat it." ... This [Photo-Environment] class is really built for like, "Here's all the information. What kind of ideas do you have…about that?" – Founder/Director

> We visited places with [the youth]. After, we [asked them to] write what they had seen … That is when they understood it. When every youth … took a photo that told a story. …That was one of the main points in the program. To see and to be able to explain. – Assistant Director

Over time, students developed more critical thought about the information they were learning. Specifically, students learned that they are able to question authority and that they are capable of asking and addressing pertinent health and environment-related questions themselves.

> We let them know that they are responsible leaders, and secondly, they should not rely on the government to come and do stuff for them. Thirdly, we make them know the Photo-Environment class is not only a profession for them to earn money, but also a way to help [in] developing the community. – Photography Educator

> A big "Aha!" moment [for students], like a big light bulb going off [was] that, "Wait a minute. We can't just say, "This is what [the government] told us. We'll go with that. That's what we'll believe. … No, let's actually test it and see if the government's saying the right thing." – Founder/Director

Sustainability learning: Youth sensitization. When students went into the community to take photos and test water quality, they were surprised at the level of pollution they discovered. With photography, students documented conditions of people and animals interacting with water, and with scientific testing, they were able to determine the potability of their water.

> In the class, … [we saw] people who are bathing in dirty water, live near dirty water and trash, drink unclean water, and wash their clothes in that dirty water. That is not good for their health and the environment. – Female Student (Age 17)

> [Students] tested the water. They saw exactly how bad it was, and then, all of a sudden, the next time they went down to the water … now that they have this knowledge, none of the kids wanted to touch the water at all. And, both the faculty.... said, "You know what, unless you do something, you have to live with it." – Founder/Director

It was this process of local observation, photo documentation, and scientific data collection that set the stage for youth to take action on issues affecting them. Using art and science to critically examine local issues, youth were equipped with the tools to be leaders in their communities.

Youth-led dialogue and action: Intergenerational influence and respect

While participating in different aspects of the program, such as taking photographs in the community or testing water sources for contamination, JE youth had numerous opportunities to engage with the public. They also facilitated dialogue during their program graduation, which involved an exhibition of their photographs along with explanations about what they saw and experienced. Using their voices, they sensitized people to their passion for the environment and shared their vision for a more sustainable Haiti. Through the Photo-Environment course, they had the opportunity to influence others in their community, including other local Haitians, UN officials, missionaries, non-governmental organization (NGO) workers, schoolteachers, students, and their families.

Communicating about problems and solutions. During the course, youth shared their ideas with the public about what they were learning, problems they were encountering, and possible solutions. As the environment educator described, "It was the kids who spoke. …say[ing] what they think, how they would [prefer] that things be." For example, a seventeen-year-old JE student told of her efforts to counteract pollution, saying, "I have talked to many not to throw trash on the streets, [telling them] they must keep clean where they live." As the photography educator explained, the students "…became [change] agents talking to the people. They said, 'We are [JE] students … studying environment and photography; it allows us to learn how to protect the environment'." While engaging with the problems of pollution and contamination, the youth came up with their own community-wide solutions.

> Some said that for change in the environment situation trashcans must be installed in every neighborhood. ... I can say about 90% of them gave their suggestion, what they would like for the environment. – Assistant Director

As a finishing touch to the program, the youth took the opportunity to impact the wider community who attended the photo gallery exhibition, which doubled as a graduation ceremony.

> The kids did not just choose the photos. They chose them according to what they have seen happening in the environment to exhibit at the graduation. ... So, the spectators— [though] they did not take the training—learned … from the kids whom were trained. The kids became the teachers of spectators because they were explaining to the spectators what the images mean, and what they should do and not [do]. – Photography Educator

Taking environmental action. Based on what they learned about their environments, JE students took steps to change their behavior, including with regards to waste disposal. Growing more mindful of the health of their water sources, they also used social media to spread a message of environmental sustainability. A twelve-year-old JE student summarized a few of her program takeaways, saying "I learned not to throw trash on the streets, not to drink filthy water, and not to do one's physiological needs in the streets." As another student explained,

> I used to just drop [trash] on the ground, but sometimes I put it in [a] trashcan if found. Thanks to that class, I know when I have trash, ... I must put it in my bag until I find a trashcan to put it in.—Female Student (Age 17)

The environment educator noted some additional changes by youth as a result of their program participation. "[The youth] said they make several trashcans at their house because there are different kinds of trash, plastic waste, chores waste that allowed them to sort the trash." According to the photography educator, there was some evidence of lasting impact from the program—not only in terms of individual behavior change, but also through continued awareness-raising by former students. As he explained, "I always meet children from the [program] who … [are] still taking pictures. They pass somewhere and see that the environment is not good, they picture it, and publish it on social media."

Transforming Haiti. The program, along with being an experience designed to inform and empower youth as individuals, was envisioned by JE educators as a way to affect broader change within Haitian society. Through the Photo-Environment course, youth were positioned to spur change within their own spheres of influence and, through the exhibition and documentary, use photography and science to reach a larger audience. Ultimately, the JE educators—who were themselves young Haitians—saw education as a pathway towards wider societal transformation to sustainability. As the photography educator explained, "We had a number of youth who have taken this training and each of those youth becomes a leader because of this training." Noting the geographical distribution of former students, he added, "…and each of the youth is in different communal section (the smallest territorial division of Haiti) [where] they will increase people's awareness of how to protect the environment." The Director shared this vision, saying, "Our endgame is to get good citizens, to get intelligent people with a good education to make what we call 'the educated decisions'." As she explained, this means designing programming and using pedagogical modes that emphasize "... not just giving people skills, but … provid[ing] a space where people can talk about the ideas." Transforming Haitian society, noted the photography educator, begins with education, particularly the kind that encourages youth to voice their concerns and propose solutions.

> To bring solution or impact inside a community, education is first mandatory. Even [if] you would pay people to clean the streets, the seashores, [that is not] the solution. But if you educate the youths, [if] you educate the people, solutions will come along. ... I can tell that it has started to have impact because we go out with the youth … to the sources of water. They understand and they make suggestions.

He continued, "Do not forget we have said, that we are building another Haiti. Through Jakmel Ekspresyon, we are forming another Haiti. Another Haiti starting from the youth."

4. Discussion

The present study explored processes of individual and collective empowerment among Haitian youth engaged in integrated art-science programming aimed to facilitate youth-led climate justice action. Contrasting with much climate change education research, which to date focuses disproportionately on the sciences, we found that the arts were critical in facilitating collective empowerment, particularly towards resisting and rewriting dominant cultural narratives that

marginalize Haiti on the world stage and marginalize youth as critical actors for sustainability in their communities. Moreover, we found that integrating the arts and sciences had the potential to empower individual youth by supporting their critical awareness of environmental problems, their capacity to communicate with adults—including decision-makers—and by encouraging their active participation in transforming their communities. Findings of the present study have implications for youth-centered educational programs, collaborative research, and community organizing for intergenerational and climate justice.

4.1   *Arts-based engagement for social change*

Findings of the present study suggest that the arts can be key to sustainability transformation, particularly along the path towards climate justice. Participants noted that photography and film became a way to exert pressure on power holders, to reach out to community members, and to communicate with a global audience. Moreover, the youth themselves controlled the message, painting their own picture of Haiti that displayed community strengths as well as their concerns. Historically, the arts have been a key ingredient in social change movements, serving to spread cultural messages that may reframe or replace dominant, oppressive messages (Kagan, 2011). In this study, the photography component was based on photovoice methodology, which has theoretical roots in the tradition of documentary photography (Wang & Burris, 1997). Like films sharing this style, documentary photography is oriented towards social change. By capturing real-life situations, the artform can bring attention to the unjust or unsustainable status quo and spur action (Tate, 2020).

The arts were a portal through which youth could fully access their personal and collective power. As noted by Blanchard and colleagues (1996), "Empowerment is *not* giving people power … People already have plenty of power … We define empowerment as 'letting this people power out'" (p. 13). Through the gallery exhibition, JE youth were raising awareness around local threats to the health and safety of their community members. Through the Photo-Environment course and two community-wide gallery events, young Haitians drew together a network of local residents, including students, their families and neighbors, local educators, UN officials, missionaries, and NGO workers. Building networks of concerned community members is critical to social change action. Findings suggest that through the arts, youth participants were reaching the hearts (not just minds) of attendees. This is important because in communicating about climate change, reaching your audience on an emotional (not just informational) level is critical (Bieniek-Tobasco et al., 2019; Kagan, 2011). This extends not just to those in physical attendance at the galleries, but those audiences—in Haiti and internationally—who were reached through the documentary films resulting from this project.

The present study adds to a growing body of research emphasizing the role of the arts in sustainability transformations (Bentz, 2020; Kagan, 2011). In particular, findings of the present research resonate with those of previous studies indicating that the arts can be a pathway for youth to connect to, communicate about, and create community-based change in response to the climate crisis (Trott, 2019; Cutter-Mackenzie & Rousell, 2019; Derr & Simons, 2020). Moreover, in Haitian cultural context, the arts can be a way to invite children and young people, who are often disempowered on the basis of age, to use their voice and to be seen and heard by the wider community of adults. As Faedi Duramy (2015) noted in her study of children's participation in Haiti, the use of expressive and participatory approaches:

...on the one hand, can encourage children and young people to reflect on, portray, and recreate their social reality, and, on the other hand, it can help the society itself to understand children and young people's needs and comprehend how they perceive their communities. (p. 449)

In other words, the arts can be a medium not only for communicating about problems, but also a platform for dynamic exchange that deepens understanding and inspires solutions. Building on previous studies of youth empowerment (e.g., Bentz & O'Brien, 2019; Hayden et al., 2011), findings of the present study suggest that the arts offered children and young people a way to resist and rewrite dominant cultural narratives about young people's capabilities while instantiating a more just and sustainable future through their actions.

4.2   *Integrating the arts and sciences for youth-led action*

While the arts were perhaps central in youths' outreach efforts, the sciences added crucial elements in the process of youths' personal empowerment. The core science-based component of the course (i.e., water-testing) was designed to support students' critical awareness of water security challenges in the region. An explicit goal of this element of the course was to support youths' ability to think for themselves—a skill not encouraged in traditional schooling that focuses largely on rote memorization. Integrating the arts and sciences, through JE programming, thus became a way of interrupting what Freire (1972) termed the "banking" approach to education (i.e., depositing knowledge into the minds of passive students; supporting the status quo) and instead developing students' *conscientization*, or critical consciousness, a concept theoretically related to empowerment (Christens et al., 2016), which involves understanding the world at a depth that encompasses its political and social contradictions and provides a platform for social change (Freire, 1972).

As a multi-level concept, empowerment processes play out at the level of individuals as well as communities, organizations, and societies (Kloos et al., 2011). Through the Photo-Environment course, youth were empowered as individuals and collectively, as Haitian youth, working for positive change. As a community-based arts center dedicated to nondiscrimination, JE became a space where adults and youth were able to practice intergenerational respect, where young people's ideas were taken seriously and their civic participation encouraged. Moreover, students were encouraged to question the validity of claims made by authorities and to develop visions for a more sustainable future for their region. Towards identifying methods to cultivate young people's constructive climate change engagement, findings of the present study suggest that art-science integration may be an empowering engagement strategy allowing young people to engage with climate change in personally relevant and locally meaningful ways. Through integrated art-science programming, young Haitians in this study were connecting with their community, developing a sense of care and concern for their environments, and collaboratively working for change. In short, by standing up and speaking out—aided by the arts (i.e., photography; documentary film) as well as the sciences (i.e., water quality testing)— JE staff and students were (re)claiming their power in the face of climate change and environmental degradation.

5. Limitations

Findings of the present study should be viewed within the context of its limitations. First, student interviews were conducted with only five students, all from Cycle 1. Although additional interviews were planned, they were impeded by local political unrest in 2019 during which much of the country, including Jacmel, was on lockdown. As such, students' direct experiences with Cycle 2 are missing from the present study. Additionally, except for the interview with the JE Director, all staff and student interviews were conducted by the JE Director who was, in some sense, in a supervisory role relative to interviewees. Consequently, the content of most interviews may have been affected by power dynamics in the interview context. It is not possible to know whether or how the Director's role as interviewer may have affected participant responses, however, all interviewees were advised to provide honest answers about the program and their experiences so that the program may be improved. Despite these limitations, there is evidence that data quality is high. First, JE staff interviews provide insight into students' experiences during both Cycles 1 and 2. Further, the nature of the relationships between the JE Director and staff are more akin to collaborator/co-organizer than employer-employee. Moreover, the JE Director held a less visible, day-to-day role in the Photo-Environment course compared to other staff interviewed for this manuscript. As a result, student interviewees may or may not have perceived the Director to be in a supervisory role. Finally, the data quality likely benefited from interviews being conducted in Haitian-Creole compared to English, the primary language of researchers involved in this study (Pluim, 2017).

6. Conclusion

The road to climate justice will require a new playbook, both for international agencies and governing bodies as well as on-the-ground actors ranging from university researchers to community activists. Critical to this is changing the ways in which the stories of climate vulnerability are written, literally and figuratively; both now, and for the increasingly difficult to foresee future. In this paper, we have explored one particularly promising model for an alternative, solidarity-focused approach to engaging marginalized, under-resourced populations with critical climate-driven natural resource issues. In particular, the arts and sciences offered young people avenues through which to connect with, communicate about, and combat sustainability challenges affecting their communities. Moreover, integrated art-science engagement opened the possibility for young Haitians to exercise their individual and collective power as change agents, advocating for the improvement of their communities and their lives.

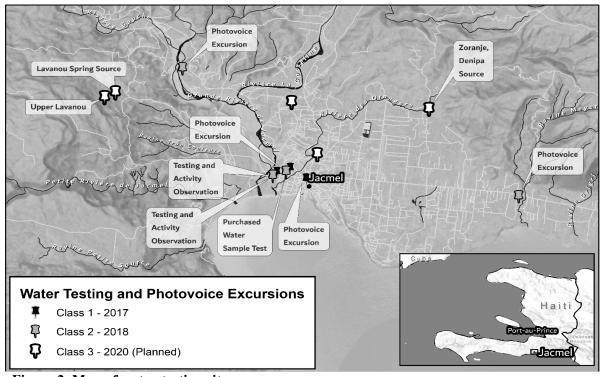**Figure 1. Student taking photograph, Cycle 1**

Figure 2. Map of water-testing sites

Figure 3. Student photograph, Cycle 1

Figure 4. Results of water-testing, Cycle 1

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