

Youth Engaging in the Science of Resilience in Urban and Rural NC (YES-Resilience)

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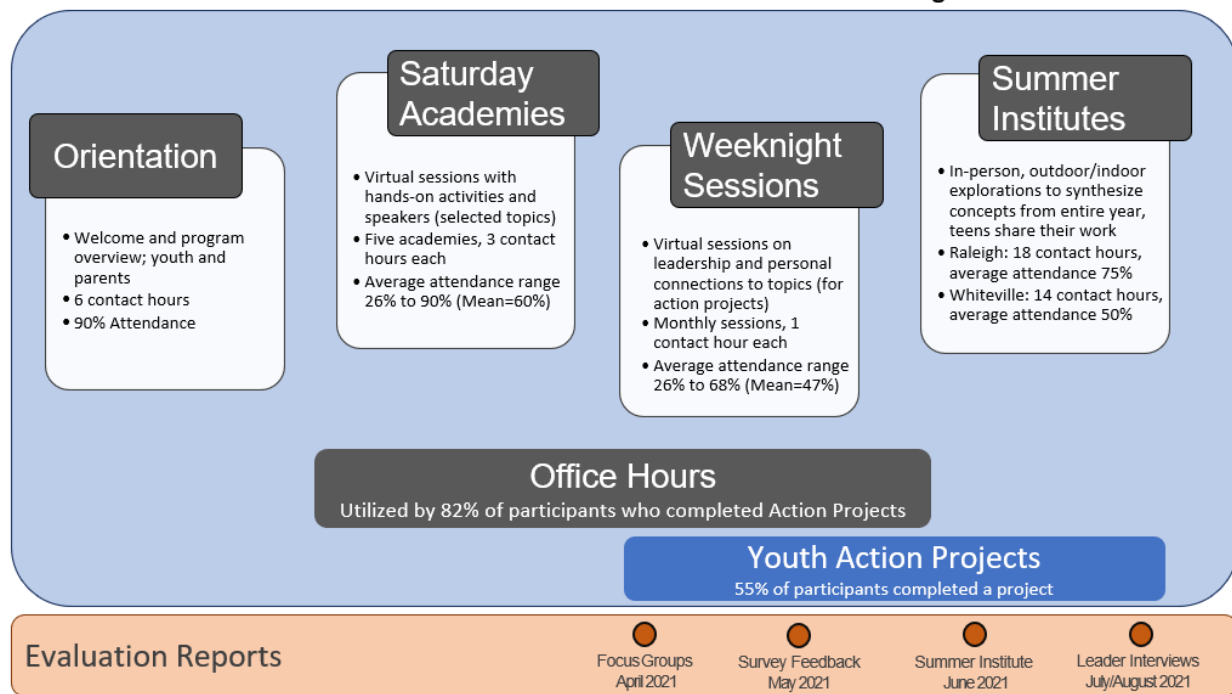
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YES-Resilience | Program Activity Summary

August 2020 – June 2021



YES-Resilience | Participant Focus Groups

Evaluation Summary, April 2021

This report summarizes preliminary insights and suggestions garnered from three participant focus groups which took place virtually on Saturday, April 17. The insights and recommendations are grouped by topic. The suggestions included come directly from participants.

Insight #1 Activities and meetings have been a positive, enjoyable learning experience for participants.

Saturday academies (Half-day virtual events focused on a specific topic):

- Topics that were especially enjoyed were the oceans, learning about environmental justice, and health aspects of climate change. The guest speakers who were most memorable were the speaker about turning hog waste to energy, those who spoke about bringing meals to people in need, and the guest who demonstrated the prescribed burn.
- The Breakout/Escape room was cited as a particularly enjoyable immersive activity.
- Suggestions from the participants for improvement focused on logistics, not content. Of course most students would want the meetings to be in person, but for improving distance meetings, some suggested shorter, more frequent sessions. This mostly came from a desire for less time spent on virtual meetings such as Zoom (recent virtual learning has exhausted the medium).
- The consensus was that three hours was a really long time in a virtual meeting, even if it is split into segments. (Though that length would make sense in person, they say.) Participants pointed out that breaking up the long meetings could make meetings easier

to remember (i.e., if shorter meetings were at more frequent, regular intervals).

Weeknight sessions (Evening sessions focused on building community and cultivating climate leadership)

- Items particularly enjoyed about the action/climate leadership sessions were the time participants spent talking and brainstorming about projects and learning how to talk to others about climate change. One participant went into detail about how they had learned to talk to neighbors about climate issues without being depressing or uncomfortable.
- There were not any suggestions for improvement. The students cited school and extracurricular activities as barriers to attending these. The time on Zoom was (again) an issue, but participants recognize that having the meetings on Zoom saves travel time.

Insight #2 Many participants are working on action projects which they intend to finish.

- The detail with which students shared their projects seemed to indicate interest in and excitement about their work. We heard about community gardens, both food and pollinator, online sharing through blogs, website(s), a webinar, and tangible art made from recycled waste.
- Participants said they know when and how to get help and all agreed it was plentiful. Also, there were no requests for assistance. When asked about ways they had received help, the office hours with staff were mentioned along with suggestions about projects, network contacts shared, and many informational resources. One participant noted there were funds for projects available as well.

Insight #3 There is evidence that the program has influenced how participants see the environment around them and their intention to share with others.

- Participants shared how they see concepts from the sessions in action around them - like when they complete the suggested activities. An example given was going on a walk and listening to a podcast or noticing wildlife near their homes. Participants like the hands-on way they were invited to investigate things for themselves, as with the infrared thermometer. This tangible approach helps hold their interest.
- As mentioned above, participants are thinking about sharing with others both in person, and through sharing their projects. The web-based project ideas, in particular, seemed to focus on sharing what they had learned with a wider audience.
- Students see examples of climate change in their North Carolina communities, and these local connections have led to further opportunities in their areas. One of the participants mentioned staff had helped them with networking for their project resources. Another discussed talking to neighbors about climate change in a way they would not have before the program.

Insight #4 Students desired more time for interaction with each other during formal sessions, as well as better ways to informally interact with peers.

- The participants expressed a desire for more student-to-student connections, especially in an informal way. They also enjoy working with other students on content, learning in a group, and would like to have more of that.

- There was a suggestion of using a chat-based app for interaction less focused on learning goals. Another suggestion for this was to offer social time during formal meetings, such as a “hangout” breakout room to just visit during breaks in the program.

Insight #5 Primary barriers to participation were due to scheduling conflicts.

- Barriers to participation mentioned included forgetting that there was a meeting, having to complete schoolwork and extracurricular activities. These items are typical for active teenagers and may not be avoidable. However, suggestions for mitigating these came back to having more frequent, regular meetings, so they were easier to remember and the content would not seem so long ago and far away. Also, if participants were to miss a meeting, they would not be missing as much material.



YES - Resilience | Participant Feedback

Summary of insights from survey feedback and focus group interviews, May 2021

This report presents findings from an analysis of the open-ended answers to all YES – Resilience Saturday Academies and weeknight sessions to date, along with the transcript of focus group interviews held on April 17. All of the data was compiled in Atlas.ti and segments of text were assigned descriptive codes based on their contents. Particular segments may have been categorized in more than one way. Themes were drawn from the most frequently occurring codes.

“They’ve been immersive and agile, and very educational, which has been really interesting. You really get immersed in the subject matter. It’s not a surface level thing.”

YES – Resilience Participant

Participants report an overall positive experience with the YES – Resilience programming. Ratings of overall impression of the meetings increased steadily through the fall, though they leveled off in the spring. Open-ended answers and interview data suggest that may be due to some fatigue with video-based meetings. Participants especially enjoyed time in smaller groups discussing environmental topics, doing hands-on activities, and receiving one-on-one support for their projects. Themes from the qualitative analysis along with illustrative quotes are presented below, accompanied by a list of specific suggestions gathered during the interviews.

Collaboration, Communication, and Connection **Participants find discussion time highly beneficial.**

The theme of connecting with others through this project was front and center in all data – both from the post- activity surveys and interviews. The participants liked the times they had in small group discussions and requested more. While this may be an indication of highly social adolescents, there was also still a focus on climate and the environment. Focus group participants talked about how they appreciated learning to talk to others about climate, and their projects show potential for reaching a wide range of individuals.

“I enjoyed the session, the game simulation, and the amount of interaction with breakout groups and getting to know others.” Open Ended Response

“The one thing that I took away the most was learning how to talk about climate change to somebody else, learning how to present it in a way so that it wouldn't make them uncomfortable or want it seem depressing. That's what I took away. And I thought was fun, like the last client workshop session. And I have gone out and I talked to my neighbors about climate change.” Focus Group Participant

More informal communication is desired.

Participants would like to have a less formal way to communicate with leaders and each other both during meetings and outside of meetings. For example, this could be done with a group chat platform in which participants could discuss projects or share opportunities. During the meetings, they would like more chances to work as a group with the other students, perhaps through a breakout room for casual conversation during breaks.

“I feel like in an informal way, texting or whatever it is, is very beneficial. Number one...you can connect more easily because it's more genuine and not as made up. And number two, you can also like it's easier to like share ideas. So if someone sees some program or something like that, or like a protest for climate justice or something that that comes up, they can immediately share it.” Focus Group Participant

Specific Suggestions from Focus Group Interviews

- More activities like the podcast walk break
- Shorter meetings more often
- Have meetings in person
- Offer more discussion
- Provide a way for informally connecting with other participants both during the meetings and outside of events

“I personally would enjoy having more chances to work with fellow students and learn as a group.”
Focus Group Participant

Participants value time with mentors.

It seems the idea of a project was daunting at first, but since the beginning of the program, the majority of participants have an idea in development with assistance from program leaders. Staff and leaders were described as understanding and accommodating, and participants noticed that their suggestions from the feedback surveys were taken into account.

More Positive Feedback

“I do feel confident explaining my action project to others because I know how to talk about climate change, and my action project is talking about climate change to other people.”

“I thought the previous session was perfectly balanced and enjoyed listening and interacting with my peers and the speakers. I do not have any criticism.”

“We've filtered through different ideas along the process, but they helped us realize that this is the one that is like plausible for us, and one that we think we want to stick with. And they're always easy to reach...[and] helping us figure out a venue spot...to showcase our things.” Focus Group Participant

Community connections are apparent.

Participants' projects will reach various communities (town/city, neighborhood, middle school students, online communities, etc.) through art, community gardens, blog posts and websites, and more. Some of them discussed sharing about what they were learning with others outside of the project. Whether talking to parents or neighbors, or speaking to unknown others in an online community, participants are interested in showing what they have learned. One participant shared how they felt more

comfortable sharing with others about climate change on a local level:

“When I go outside now, I’ll notice something and I can discuss with my parents like what I’m learning in the climate justice program, and... [I] feel like it’s great to kind of go outside and kind of understand how the environment works a little bit.”
Focus Group Participant

Moving Forward

Some participants have completed or nearly completed their projects, and showed they were thinking about how to present those to others inside and outside of the program. At least one participant requested more information on how the project was to be shared at the summer institute. Continuing to focus on engaging participants through hands-on activities, including as much discussion as possible, and continuing to guide them through how to share with others is recommended for continued program success.

“It was great! I learned even more about climate change, specifically its impact on human health which was very interesting. I also got to meet new people from both the Raleigh and Whiteville program which was fun! Lastly, the activities were very engaging.” Open Ended Response



YES-Resilience | Summer Institute

Insights from Surveys, Interviews and Observations, June 2021

Summer Institutes were held as the culminating activity of the YES – Resilience program at the NC Museum of Natural Sciences in Whiteville, NC (June 8-10) and in Raleigh, NC (June 22-24). The purpose of this report is to provide information regarding the participants' perceptions of successes and challenges for the event(s), and any needed changes to the program model. The data for this report comes from observations and artifacts, three focus groups (one in Whiteville and two in Raleigh), and 22 end of program surveys. The survey questions about the Summer Institute asked participants to share what part of the institute they most enjoyed, and what about the institutes needed to be improved.

On Location - Finally

After nearly a year of entirely virtual meetings, in-person meetings at each museum brought with them a revival of motivation, interest, and enthusiasm at the end of the program. The teen participants enjoyed being in the company of their peers and combining learning with discussion, hands-on activity (such as building a cardboard city) and physical exploration (like a downtown scavenger hunt or kayaking adventure). The Whiteville cohort averaged six participants per day (with maximum of 8) and the Raleigh group 14 a day (with a maximum of 15).

"I'm a lot happier than when we're online. It's just really draining to view the screen for so long. And we're just sitting, and now we're able to walk around. And I love how we went outside. I've never actually explored downtown." – Raleigh Participant

Key Findings

- Participants found the in-person institutes engaging and enjoyable.
- Hands-on activities were the favorites, especially the Cardboard City.
- Participants showed a desire for community and connection with each other.
- Preliminary evidence points to a shift in participant thinking, possible impact on their actions.
- When possible, use less technology to deliver programs add more breaks to schedules.

Activities

The YES – Resilience Summer Institutes featured application activities designed for participants to meaningfully interact and apply what they learned through the program. The program leaders, museum staff, and content experts connected, in-person for the most part, with the teens to complete these end-of-program activities. The procedures at each site varied, mainly due to location constraints and needs of the participants. In Whiteville, the parent survey indicated that there would be some difficulty getting participants to the museum three days in a row so the first day of the institute was held on Zoom. This was the most significant difference from what was originally planned for the summer institute meetings. Both locations enjoyed a variety of indoor and outdoor activities, with guest speakers and participant presentations. The activities in blue on the table were specifically mentioned in responses to questions about which aspects of programming were most enjoyed by youth participants.

Activities				
	Mode of Delivery	Whiteville	Mode of Delivery	Raleigh
Day 1	Online (2 hours)	<ul style="list-style-type: none"> • Environmental Justice Timeline • Climate Mitigation Metaphors • Introduction to Cardboard City Challenge 	In-person (6 hours)	<ul style="list-style-type: none"> • Introduction to Cardboard City Challenge • Tallest Tower Activity • Climate Privileges and Environmental Justice Activity • Climate Mitigation and Energy Justice Activity
Day 2	In-Person (6 hours)	<ul style="list-style-type: none"> • Kayaking Eco-tour • Stormwater Walk • Guest Speaker (NC Coastal Federation) • Shifting Shorelines Demonstration 	In-person (6 hours)	<ul style="list-style-type: none"> • Climate Resilience Scavenger Hunt • Guest Speakers (Operation Climate, Duke University) • Environmental Justice Timeline • Flood Preparedness Walk • Nature Journaling/Climate Story/Action Project Presentation check-in
Day 3	In-Person (6 hours)	<ul style="list-style-type: none"> • Cardboard City Challenge • Guest Speaker (NC Office of Resilience and Recovery) • Expanding Spheres of Resilience • Four (4) Action Project and Climate Story Presentations 	In-person (6 hours)	<ul style="list-style-type: none"> • Cardboard City Challenge Part 2 • Guest Speaker (NC Office of Resilience and Recovery) • Expanding Spheres of Resilience • Nine (9) Action Project and Climate Story Presentations

Feedback on Activities

Participants' comments in the interviews and surveys show how the Institute, and the program as a whole, was well-received. There were many successes. To answer the question, "What have you enjoyed the most about the summer institute?", the most

common answer was the ability to work with their peers (nine of the twenty-one comments were about meeting each other and working together). Participants appreciated the time for talking and collaborating throughout the programming. Some of the other Summer Institute activities that participants mentioned enjoying the most were the outdoors experiences (e.g., exploratory walks/scavenger hunts, and kayaking). The most mentioned activity was the Cardboard City Challenge. For that activity, the teamwork and action based on concepts from the entire program, with the added opportunity to think creatively, really sparked participants' interest.

*“That fictional [cardboard] city helps you kind of really get an idea of how different initiatives and how they experience climate impacts can change people's lives.”
- Whiteville Participant*

Collective Impact

Participants' comments on the surveys and in the interviews showed how the content and activities came together in ways that seemed to impact their actions and thinking. These strands may be explored further in program research and evaluation.

Building Community. Participants' comments about the institutes and activities they enjoyed the most were focused on making connections with others, sometimes with the guest speakers and leaders, but mostly other participants. They liked being able to talk to others in person and collaborate when working with program content. This reflects what was found in survey results throughout the year as the teens consistently asked to be in smaller groups, and desired in-person meetings whenever possible. It is likely this result was facilitated by the pandemic situation that kept them in virtual meetings for most of the year.

“I enjoyed making the cardboard city the most. It pulled together everything we have learned and interacted with over the course of the program. We were also allowed to work together for the first time in person.” – Post-program survey

Changes in Thinking. The potential for the program, including Summer Institute, to impact the thinking and actions of students also emerged, especially in how participants shared their willingness to tell others what they learned about the impact of climate on their own community. One teen used the word “empowered”, and others mentioned thinking about topics when walking around near their homes (e.g., the amount of concrete or places prone to flood they viewed). The guided practice given through the walks and explorations (e.g., kayaking, scavenger hunt, journaling) provided concrete examples that could be easily shared when they speak with others.

*“The scavenger hunt really made me more aware of the surroundings, and in terms of the climate or weather [I could] use the thermometers and compare different surfaces. We could see in real time what was going on.”
– Raleigh Participant*

Moving Forward

The suggestions for improvement offered by teen participants highlight some themes in the data and indicate areas that may be targeted for improvement in future iterations of the program. The most common specific suggestion for improvement of the institute was more time outside (five of the 21 comments). Other notable themes that emerged

throughout the interviews and survey comments provide the basis for further recommendations.

Targeted Technology Use. Technology can allow versatility and variety, but it is also sometimes limiting and can present barriers to participation. More than one participant reported issues with technology over the course of the program such as dropped internet signal or problems with Zoom. For the Summer Institute, there was some disappointment over the Whiteville day which was online. Multiple suggestions were made that online meetings be used for shorter sessions during the week, as the three plus hours-long Zoom sessions were a lot to take in at one time. In the future it is recommended that technology use for meetings be sparing unless its use is required.

“It might have been harder for me like to do in person during the school year, [so meeting online] was nicer. I felt like it was a little bit more accessible, [as I’m] being kind of busy, to go online. But definitely I prefer [in person meetings].”
– Raleigh Participant

Peer to Peer Opportunities. The preference for face-to-face activities with peers was clear, but this can still be addressed when virtual meetings must be used. Meetings should include ongoing chances for individual participants to speak to each other. Small group, cooperative activities where each participant controls an aspect of the task can be conducted whether in-person or at a distance, using the breakout features in Zoom. Leaders should remain cognizant that proximity in a small group breakout does not automatically result in speaking or interaction - participants will still need guidance on what to speak about and how to contribute.

*“The only reason I didn’t give [the meeting] an excellent was because in the breakout room it was hard to interact with people. It didn’t feel like there was a lot of structure for those activities.” *FALL Academy Survey Response**

Connect with Adults. In addition to talking with each other, hearing from the guest speakers and a student intern made an impact on the participants. Hearing directly from experts working on climate issues provided new perspectives for participants to consider. Two participants requested more opportunities to hear from climate professionals. In addition, speakers who were younger (e.g., undergraduate students) showed the teens what sort of activities they could do in the near future regarding climate resilience. The UNC intern provided resources, guidance, even advice on college admissions – all of which were mentioned by participants. Continuing to use young interns and professionals who can serve as role models and mentors is advised for further programs.

“Anybody can read an article on something but having an expert saying it to you is a different experience. It’s very beneficial.” – Whiteville Participant

Active Elements. The teens commented heavily on the activities that included physical movement, interaction, and outdoor time. It is also clear from the participant feedback that the chance to exchange ideas with small groups of their peers, especially in person, was highly valuable. Even though the scavenger hunt included heavy use of technology, the added interaction with peers and physical activity made it one of the

favorites. It is recommended that the program continue to offer as many of these types of opportunities as possible to maintain engagement.

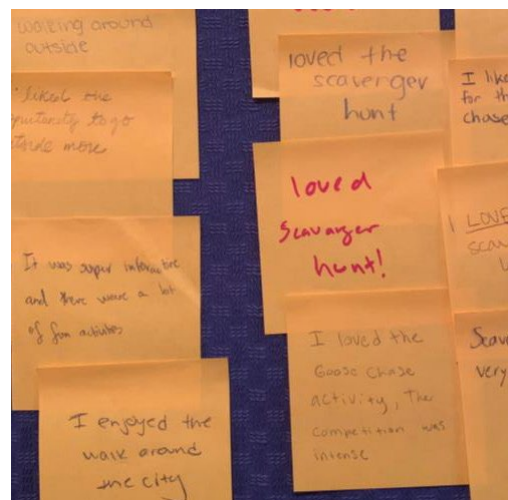
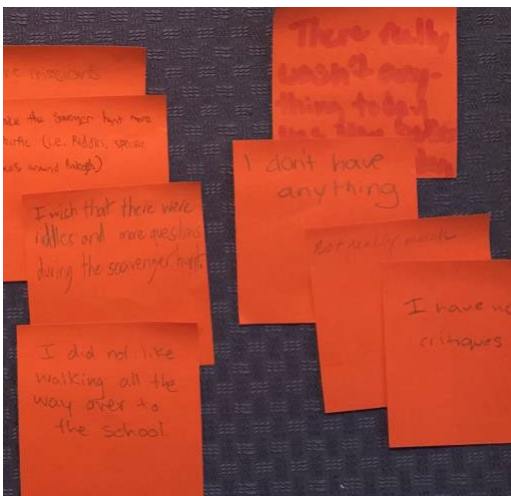
“People are built to be social, which Zoom kind of fulfilled that. But humans were also built to move around and do stuff. They weren’t built to sit on a chair, looking at something for a large chunk of the day.” – Raleigh Participant

Adding Breaks. Many requests were made for more breaks during long sessions, for both online meetings and in- person. Leaders’ interviews indicated that they thought about adding breaks (and did), but the participants requested more. Almost every feedback group (at both the spring sessions and Summer Institutes) had at least one request for more breaks. In future programs, leaders should add the amount of breaks they think are needed, then add one or two more.

“[The first day] was like, two hours of just listening to background information. Then we have like a 30- minute break for lunch. And then we’re back for three more hours. That was a lot to do.” – Raleigh Participant

Conclusion

The COVID-19 pandemic created challenges through the year for the YES – Resilience program, and the in-person Summer Institute was a welcome change to virtual meetings. Technology had facilitated all prior meetings, and the participants stated they particularly enjoyed meeting their peers face-to-face. Throughout the program and at the Institute, the group formed a community of learners, building connections with each other and content experts while gaining knowledge that could be applied in their own communities. Participants shared examples of how the program made them think about their own surroundings, and further research on their planning and execution of Action Projects should reveal more about what the extent of change may have been in participants’ skills and knowledge.



YES – Resilience | Leader Interviews

Evaluation Summary, August 2021

Following the completion of the YES – Resilience participant activities, six program leaders, educators, and museum staff were interviewed in July and August of 2021. This is a summary of the information gathered, organized into emergent themes from those interviews. Questions covered the interviewees' roles, challenges and success in program planning and delivery, as well as reflections on opportunities for improvement and future implementation of similar programs.

Key Findings

Adjustments to original plans due to the COVID-19 pandemic presented challenges for planning, delivery, and participation. The original proposal included in-person meetings with participants, and the pandemic situation dictated a conversion to virtual meetings. A fall orientation, six (6) Saturday academies, ten (10) weeknight action and leadership sessions, and any “office hours” were held via Zoom. The only in-person events were the Summer Institutes, held in Whiteville and Raleigh in June 2021. In addition, extended closure of museum buildings during the pandemic made it difficult for the museums to integrate YES - Resilience participants and activities into operations. Building a community of learners among participants was a challenge due to hesitancy to share online and unpredictable attendance. Rural participants may have had more barriers to full participation due to the pandemic, but educators used emails and phone calls to stay in contact with participants who hadn't recently attended. As the quote below shows, even for the in-person Summer Institute, there were obstacles for some rural participants.

“I think in terms of the Summer Institute, we had lower participation, even from the active students, I think, because...the museum was not as accessible for some of the students, you know, [it] would have been an hour drive for some of them.”

Museum educators collaborated closely on content and delivery with assistance from project leaders. The leaders were more involved in planning and delivery of the participant sessions than originally intended. They led most of the planning for Saturday Academies and the museum educators worked together to plan the weeknight sessions. This arrangement proved to be beneficial for the educators who had complementary skills for planning and delivery. They (the educators) were able to pool resources to respond to student needs in planning and through additional sessions held to assist students with project activities. (14 of the 31 total participants utilized these extra opportunities to meet with educators.) It is recommended that future iterations of this program have a guide that clearly delineates responsibilities for each planned session to ensure tasks are completed as expected.

Connections between and among individuals and groups emerged as a benefit of the University/Museum partnership. Museum leaders appreciated the high-quality educational content and the connections with high-school students who returned to the museum for other programs and might serve as a volunteer resource base in the future. The program leaders appreciated the connections to museum networks for

recruitment of participants and spaces for meetings. The museum educators noted that the connection to both the University/IE and the museum had beneficial connections to engaging guest speakers for the YES - Resilience sessions and they appreciated the guidance from science educators with many years of experience working with youth, as indicated below:

"We wouldn't have been able to participate in a program like this, or do an extra program like this, none of the staff would have had time without [the partnership]. Without that extra educator in there, we would have never been able to participate in a program like that...(Otherwise,) I would have said, 'We'd love to, but we don't have staff to do that'."

Recommendations

Increase clarity about roles and responsibilities for museum educators (and any other program staff). Suggested guidelines should be added to any guidebook developed and should address the need for earlier and more communication from museum educators to program leaders about museum work, staff meetings and session planning and delivery. Specific tasks for the educators and interns as well as responsibilities of the museum coordinators should be listed. If possible, create a structure for setting schedules and reporting hours and/or task completion. Having more specific expectations should ease stress for all parties and could help to increase crossover opportunities between the museum(s) and the YES – Resilience program. In the quote below, one of the museum contacts had shared concern that the NSF guidelines for the funding would dictate tasks that could and could not be assigned.

"I did struggle with that a little bit in terms of being a supervisor, and not being able to really tell the educator 'You should work on this...if you're not sure what to be working on, and you need some hours, you can work on some stuff for us at the museum.' And so I feel like there was less clarity on other tasks that need to be done. And I'm sure there were plenty of other tasks. But I think that wasn't clear to the educators exactly what to do."

Share more about the program during its implementation through alternative means such as social media. Sharing activities and successes with a wider audience in real time could increase community awareness of the program and the climate issues it highlights. If leaders need assistance with using different platforms such as Instagram or Twitter, student participants could be recruited to take pictures and draft posts which could be submitted to the leaders - who could then approve before posting or share with other interested parties. This sort of activity should be included in the delineation of duties for program staff. As the quote below suggests, social media sharing could still be used during the no cost extension period.

"We started an Instagram account... And that didn't really happen. But that could be another way, especially once we start developing things that are ready, using that social media account, even now, even though the program has kind of ended, we can disseminate."

Increase the initial cohort of participants to increase the number that complete a project and/or finish the program. Some attrition should be expected for any program, but especially if the program will change significantly from what participants expect (as when forced to go online). The rural museum had fewer applicants and more attrition

overall. If possible, it is recommended rural applicants receive an extended application period in order to obtain more participants. Once it became clear that the program would be online, the program could have been offered to more students, especially from the Raleigh area. Slightly higher numbers would have been manageable in Zoom without a lot of extra cost (which was already reduced by being online). The quote below addresses possible reasons for the rural attrition:

"More students withdrew from Whiteville, so the attrition was greater...I think reasons for that are, it gets back to the original applicants, you know, and we had so many people apply for Raleigh that we kind of got the cream of the crop in our program. And in Whiteville, we pretty much took whoever applied, so we probably got some kids in Whiteville who weren't fully committed. And then when you throw COVID in, and when you throw in lack of internet access, and then they really aren't committed - I do feel like there are explanations for that."