When I wrote “Pollinating Hope” in the Fall 2019 issue of Green Teacher, there was no way I could have foreseen that the world would change unimaginably in the next six months, taking with it my view of delivery and priorities in education and extracurricular activities. At the time, I was happily basking in the success of my extracurricular environmental club’s native plant pollinator garden, which we had added to our local community the prior spring. I was excited to see what opportunities the 2019–2020 school year would bring for the club in the larger community. Looking back now, it’s almost hard to believe that only a year and a half has passed.

Like many teachers, my brick-and-mortar school moved in the spring of 2020 to remote and, eventually, hybrid delivery. And like many teachers, I was at first frustrated and overwhelmed by the abrupt switch in educational methods and the departure from everything I was familiar with in my teaching career. But I dutifully persisted and eventually came to appreciate the flexibility and possibilities of online learning, to the point that I made the decision to change jobs and teach online permanently.

Moving to Reach Cyber Charter School was undoubtedly the right choice for me. I have been able to embrace creativity in new ways and grow professionally. And once I settled into a new method of remote teaching and communication, I decided to try implementing extracurricular environmental activities in this new format. At first, this seemed like a daunting challenge, especially since my previous approach to environmental activities focused on hands-on, group projects. Reach Cyber Charter School covers the entirety of the state of Pennsylvania and my students live anywhere from an apartment in Philadelphia to a farm in one of the rural counties. Clearly, a challenge in the implementation of any extracurricular organization would be adjusting to this format. Reach is a STEM-focused school and implements STEM into curricula and extracurriculars, including a STEM camp program. It was natural to use this forum for my environmental program, and with the STEM camp coordinator’s help, I was able to quickly market and implement it. The environmental STEM camp that I started is open to sixth- to twelfth-grade students; however, a similar approach...
would work for younger students with some modifications. It was up to me to decide how to bring the concepts of real-world environmental action to far-flung adolescents as diverse in location, background, and demographics as is Pennsylvania itself. I am including a few specific examples of projects that I used with my students, but the overall concept could be applied to many environmental activities, by dividing them into components of individual action as well as synchronous and asynchronous online communication.

**STEM and environmentalism**

In my experience and research, extracurricular environmental organizations do not usually have an experimental focus; however, having far-flung students working in their home settings creates an *ad hoc* natural laboratory, allowing for easy incorporation of STEM concepts and the scientific method. The fact that each student works in their own environment presents a basis for comparison among conditions, lending itself perfectly to using the scientific method for exploring environmental action. The varied circumstances of the students’ living environments allows for a natural (albeit not necessarily controlled) experiment to be conducted. And while our data wouldn’t pass the scrutiny of a peer review board, it is a valuable lesson to the students that science is found in everyday settings, indeed in their own homes. This realization can make science less intimidating and more relatable and even lead to increased interest in the STEM fields.²

To create activities that can be carried out individually and shared online, I took projects from previous clubs and adapted them to fit remote learning and a STEM model. For example, my native plant pollinator garden became an experimental native plant/recycled container garden. Reach provided students with seeds and seed-starter mix, but students were responsible for sourcing recycled materials for containers and choosing a location for seed germination. They are keeping records of the details surrounding seed germination and resulting plant growth and sharing them with the camp using online programs such as Padlet. Will native pollinator plants best proliferate in a recycled coffee can on an apartment balcony, a suburban backyard, or adjacent to a dairy farm? The environmental STEM camp will find out!

**Creating community online**

The camp has been active for only a few months (at the time of writing) and continues to evolve. We meet synchronously once a week using Adobe Connect or Zoom and communicate asynchronously using shared Google files, Padlets, and other web-based programs. Creating a cohesive group in a virtual world is an objective of any online learning program and the extracurricular environmental STEM camp is no exception. One way to create cohesion is a group project. Creative growth, collaboration, and social interaction facilitated by group work are vitally important in remote learning.³⁴ This spring, the Environmental STEM Camp produced two “Reduce, Reuse, Recycle” Earth Day presentations for the elementary school, for Grades K–2 and 3–5. The high school and middle school students in the camp worked together to create two slideshows with Google Slides, which were presented to the elementary school students over Zoom. Through these slideshows, students defined and explained the terms and importance of “Reduce, Reuse, Recycle” in language appropriate for the intended audience. Camp students presented this information over Zoom to audiences of around 500 per assembly. After introducing the concepts, they provided easy, everyday examples to encourage children to participate in waste-reduction practices and led the group in a craft (upcycling cardboard tubes into a desk organizer). To conclude the assembly, selected elementary school students were un-muted and asked questions of the older students in a Q-&-A session. The entire camp contributed to the final product through work in small groups, each with a specific task, such as background research, presentation creation, and craft coordination. A cross-age presentation provided the opportunity for students to develop communication and leadership skills, requiring not only comprehension of the content, but the ability to express it to younger students. Group and role rotation enabled collaboration among students of different ages, genders, learning styles, and academic needs. By monitoring each group’s communication and products, I constantly evaluated the efficacy of groupings and made changes to gently motivate and to encourage social bonds.

Other interactions were purely social; for example, in a synchronous session, a conversation about pets turned to a quick decision on my part to create a shared “Pets” Padlet, which, although it deviated from the camp’s overall mission, added to the sense of shared interest and friendship among the group. Since this was an extracurricular activity and the students were voluntarily participating, it was important to keep a balance between work and fun.

**Overcoming barriers**

One of the most beneficial aspects of an online extracurricular program (indeed, of online education in general) is customization to individual students, and this is a particular strength of Reach Cyber
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Although the future of education will undoubtedly continue to evolve, remote learning is here to stay, even in brick-and-mortar settings. Extracurricular, environmental, and STEM activities, while seemingly difficult to facilitate in an online setting, can be successfully implemented and even combined. While not without challenges, I have been able to create a camp with hands-on individual and collaborative group activities. And as more students turn to online education, either temporarily or permanently, new adaptations of both extracurricular activities and nature-based activities will be necessary. But the Environmental STEM Camp has shown that with some creativity, encouraging stewardship in students through remote learning is possible.

Aislinn Benfield currently works at Reach Cyber Charter School in Pennsylvania, where she teaches Environmental Science and mentors an online Environmental STEM Camp and the middle school Envirothon team. She previously taught for eight years in brick-and-mortar schools in both urban and rural districts. Aislinn holds an MAT from Project Dragonfly of Miami University, an MA from the University of Pittsburgh and is completing an MS at Thomas Jefferson University.

References:

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