

TABLE 2

Arts-integrated environmental education activities offered throughout the professional development experience.

Activity	Four C model of arts-integrated environmental education
<p>Environmental Education & Music Guest Lecture (Workshop 4): A music education faculty member shared examples of representing climate data musically, upcycling trash into musical instruments, and using water-based soundscapes.</p>	<p>Communication: Changing global temperatures were represented musically, making the dramatic changes clear to listeners. Creative expression: Students built the physical instruments and wrote and performed musical pieces. Content explanation: Using music allowed for climate data normally represented numerically and graphically to be interpreted in a new context. Community building: This mini-lecture required class discussion, comparison, and interaction with the guest lecturer.</p>
<p>Water Bar & Public Studio (water-bar.org): Visitors tasted tap water from various locations to spark discussion of where water comes from and what influences taste. Participants also shared their own personal water stories.</p>	<p>Communication: The purpose of this work was for visitors to discuss and compare the various samples of tap water. Creative expression: Participants came up with unique and interesting ways to describe the taste and color of water and make connections to other experiences. Content explanation: Water “bartenders” provided information regarding water treatment, location, and news events related to water sources. Community building: Visitors connected and found similarities in their own experiences through conversation at this exhibit.</p>
<p>Marguerita Hagan’s Sculptures (http://www.margueritahagan.com): Sculptures of diatom and other microorganisms allowed visitors to engage with the structure of invisible living things that play critical roles in marine ecosystems. Visitors could observe the ways in which structures vary by type and place.</p>	<p>Communication: Invisible microorganisms became visible through these sculptures. Creative expression: Sculptures of the organisms allowed visitors to engage with the organisms in a way they could not through a microscope or photo. Content explanation: The sculptures presented the physical structure and function of the microorganisms. Community building: Observing similar organisms from different locations allowed visitors to consider place and connection.</p>
<p>Alexa Horchowski (alexahorchowski.com): Sculptures and video installations allowed visitors to explore interactions between water, air, sea life, and human-made objects.</p>	<p>Communication: Sculptures and videos directed the visitor to observe the connections between water, air, marine life, and human-designed objects. Creative expression: Looping of video and use of a variety of materials enabled participants to engage with this information aesthetically. Content explanation: Interactions between systems were presented visually. Community building: not applicable</p>
<p>Water Ways (https://www.thewaterways.org): This large illustrated map overlaid with allegorical drawing allows people to interact with the ways in which oil pipelines influence living things across Southeastern Pennsylvania and New Jersey.</p>	<p>Communication: A range of socioscientific issues occurring across the region are presented in this large map. Creative expression: Non-human animals depicted on the maps allow viewers to imagine the far-reaching effects of these issues and provide whimsy. Content explanation: The effects of oil pipelines and other environmental threats are depicted throughout the work. Community building: Individuals can better understand environmental issues in their own communities, perhaps sparking action.</p>
<p>Just Seeds Arts Collaborative (justseeds.org): These prints communicate struggles for water and environmental justice.</p>	<p>Communication: Struggles for safe water are described on these prints. Creative expression: Visual representation of the need for safe water is displayed in a variety of ways. Content explanation: The prints offer written and pictorial representations of the struggle for access to safe water. Community building: The prints can be seen as a call to action for visitors regarding environmental justice.</p>
<p>Mobile Printmaking Station: Participants created screen prints to commemorate their experience with this workshop series while visiting the art gallery. Teachers were provided with PDF black-line masters of their prints to enable preK–8 students to engage with this process as well.</p>	<p>Communication: An artistic representation of the theme of the PD series was displayed. Creative expression: Having participants physically make prints helped modify their approach based on their own experiences. Content explanation: Printmaking provided a visual representation of participants’ learning experiences. Community building: Each teacher created a print for their own use and black-line masters to allow their students to form community as well.</p>