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Youth as Climate Change Messengers: A Picture Is Worth a Thousand Words

Jill Hendrickson Lohmeier[1], Shanna Rose Thompson[1], Robert F. Chen[2], and Stephen Mishol[1]

Abstract

Artwork created by children can effectively communicate science content, especially for topics that are of universal concern for the public but may cause apprehension, like climate change. This commentary describes artwork from a youth art contest about climate change in which the winning art was displayed on public buses. Young artists learned about climate science while creating images that adults and youth easily engaged with in public spaces. Thus, we suggest that connecting youth with science through art, and then using youth-generated art to engage the general public in science learning can be an effective vehicle for science communication.

Keywords

climate change, environmental communication, public engagement, public understanding of science, youth art for science communication

[1]Univeristy of Massachusetts Lowell, USA
[2]University of Massachusetts Boston, USA

Corresponding Author:
Jill Hendrickson Lohmeier, University of Massachusetts Lowell, Lowell, MA 01854, USA.
Email: jill_lohmeier@uml.edu

> Education does not stop with the individual student. Like a rock tossed into a calm surface of a pond, ripples always follow.
>
> -Coreen Weilminster

Climate change is a universal concern that impacts people in diverse communities across the globe. Stories of how climate change will impact communities share commonalities, yet they also include personal elements for those impacted. How we tell the story of climate change—the causes, the potential for mitigation, and the impacts on communities worldwide—is a significant consideration for scientists and educators. We describe a project in which we found that youth art about climate change is an effective means of engaging adults and other youth in learning about climate science. We suggest that others should consider similar methods for engaging youth through art to increase youth knowledge about science and to build the youth's power to act as effective science communicators within their communities.

The scientific community has strong consensus that the earth's climate is changing in unprecedented and dangerous ways (Intergovernmental Panel on Climate Change, 2007; Karl et al., 2009). Given the urgency for global action regarding climate change (COP 21, 2015), and the alarming statistics about U.S. citizens' lack of basic scientific understanding (Pew Research Center, 2015), the need for more collaboration among scientists and educators has emerged. Informal education is one important area in which scientists and educators can collaborate to reach members of the public from all education levels, socioeconomic statuses, generations, races, genders, and localities. While formal science education on climate change can improve youth knowledge (Flora et al., 2014), educators struggle to incorporate climate change into classroom curriculum effectively (Busch & Osborne, 2013; Falk &

Dierking, 2012; Herman et al., 2017; Jackson & Gould, 2017; Lowman, 2014; Oversby, 2015; Wise, 2010). In addition, most adults are not afforded the opportunity to learn about climate change in classrooms or other formal educational settings.

Fortunately, informal science education is poised to tell the story of the climate in a manner that can provide context to the realities of such change as well as potential meaningful and constructive solutions. For example, Haynes and Tanner (2015) found that children who attended workshops about climate issues and created films on a particular issue proposed solutions and learned more about the underlying social factors related to environmental issues. The workshop attendees also had more confidence to question community leaders on environmental issues and to push for actual change. The challenge for the field of informal science education is clear: How can science communicators encourage diverse audiences of all ages to learn about and be engaged in climate science in their everyday lives?

According to Weilminster (2014), "kids of all ages can be viewed as effective conduits of what they learn. In fact, in some families up to 85 percent of awareness of environmental issues is generated by children" (p. 21). Trott (2019) also demonstrated that youth are important communicators in their families. Children who participated in their after-school program about climate change became leaders in their families and communities by creating action plans to reduce carbon footprints. Through the program, the children's awareness of climate change increased, and they subsequently shared their newly acquired knowledge with their families and communities. Timmis et al. (2020) also demonstrated the importance of children in the communication of science within families. More specifically, they found that children can impact parental decisions and work against misinformation in their families.

Young people are viewed as "non-threatening storytellers" or "communicators" (Weilminster, 2014, p. 21). Numerous examples of the importance of youth communication leading to activism abound. In 1976, the Soweto Uprising, planned by teens, brought attention to the need to end apartheid. Approximately 10,000 to 20,000 students walked out of school to protest the education system in South Africa under apartheid (Ben, 2015). Similarly, after years of inaction, youth movement efforts following the Parkland shooting led to significant legislative changes on gun control and led to increased youth voter registration (Bonier, 2018; Krantz, 2019). When youth see other youth communicate about important matters, they are likely to follow suit. In what is becoming known as the Greta Thunberg effect, youth who are exposed

Figure 1. A Lowell Rapid Transit Authority (LRTA) bus displaying a youth-generated cool science poster.
Source. Photo credit: Cool Science Research Team.

to her work have greater intentions of climate change activism than those who are not (Sabherwal et al., 2020).

To harness the powerful intergenerational learning opportunities youth can provide, more programs are needed that provide platforms for their narratives to be seen and heard. For instance, youth artwork can serve as a catalyst for intergenerational learning not only when it is created, but also when it is shared with the public. More specifically, in our program, Cool Science, mentors and other adults (e.g., parents, teachers, relatives, community members) engage with young artists to facilitate ways in which youth can create art about climate science. That artwork is then displayed in public areas, such as on public transportation, where nearly thousands of riders per day have the potential to see it. For the past 9 years, we have been holding youth art contests about climate change in which the winners' art is displayed inside and on the outside of public buses. An example of the winning art on a public bus can be seen in Figure 1.

To gain an even larger following, the youth artwork is also displayed on social media accounts (e.g., Instagram, Twitter, Facebook, Youtube) and websites where multiple generations might engage with such material. On a community level, both in-person and virtual local art exhibition celebrations serve as venues for educational exchanges among young artists, their peers, mentors, family members, and community members. Thus, exposure to the youth's visual narratives about climate science can occur in a variety of settings for people of all ages.

Youth's Climate Science Visual Narratives

Youth are surrounded by cultural rules, and visual narratives created by students often abide by these cultural rules and pictorial conventions (Burkitt, 2004). Youth drawings can also be representative pictures that include cultural elements and viewpoints (Anning & Ring, 2004; Ozsoy & Ahi, 2014). These ties to cultural values are likely to be engaging for the artists' own communities. Youth climate activism can result from epiphanies from negative experiences, concerns, and fear (Fisher, 2016). Fear and hope are two foci often found in climate change narratives (Stern, 2012). Messages of fear often use dark colors and present apocalyptic images of habitats being destroyed as well as deserted dried out landscapes filled with smoke or smog (see Figure 2). On the other hand, messages of hope are often presented using bright, colorful tones with lush green sceneries with blue sunny skies and humans engaging in positive actions (see Figure 3). Youth also use diptychs to portray two very different versions of the future: one that they fear and one that they hope will come to fruition (see Figure 4).

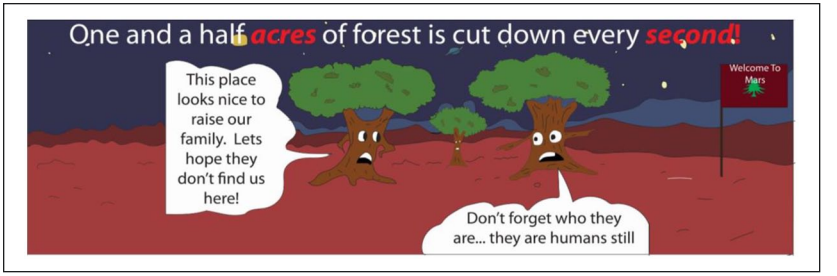

Figure 2. Youth artwork example that presents a message of fear.

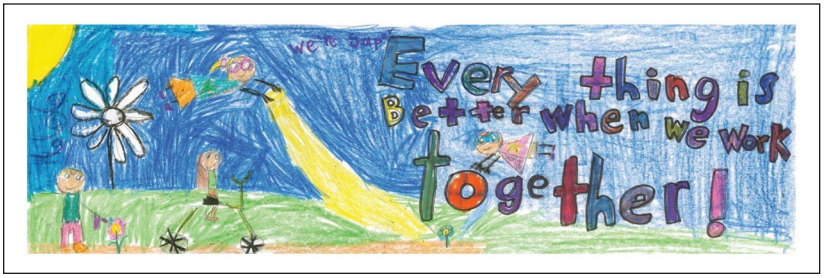

Figure 3. Youth artwork example that presents a message of hope.

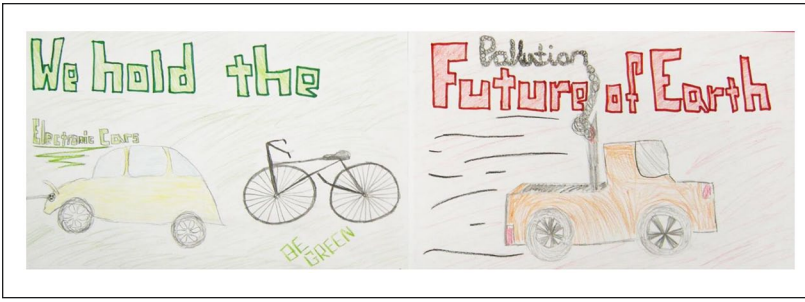

Figure 4. Youth artwork example that presents a dual message.

Figure 5. Youth artwork example that presents a fact-based approach.

Other climate science narratives emerge from young people's visuals as well. For instance, some youth convey important facts related to climate science in their visual narratives like John did in his piece "The Greenhouse Effect" (see Figure 5). More specifically, he provides his audience with several science facts, all given in bite-size chunks. He also uses two types of arrows to illustrate the directions of the processes.

In addition to conveying science-related facts, young people are not afraid to use their visual narratives to pose tough questions to their audiences like Emma's question in Figure 6 does: "Kids get it. Do you?"

Her question is ambiguous at first, requiring viewers to ponder the question before continuing. Then she demonstrates her self-efficacy in environmental activism (Bandura & Cherry, 2020) by delivering her punch line: "Think like a kid, help stop climate change," which asks adults to stop and change their lens. More specifically, she asks adult observers to remember what it was like to think like a kid and to consider why it may be better to think like a kid, especially when considering an issue that will personally

Figure 6. Youth artwork example that presents a question to its audience.

impact children more than it may those who are now adults. In addition, she cleverly uses an image of a pinwheel, which is a symbol that reminds many adults of fond memories and images of childhood happiness. It also serves as a reminder of a universally shared value most of us hold—that all children deserve a happy and safe childhood. In addition, it invokes images of wind turbines, which are becoming an important source of alternative energy. Emma's visual narrative is simple, yet powerful because it invokes an emotional tug toward our thoughts of childhood which makes us stop and think about an issue like climate change from the lens of a child. Clearly, K-12 youth can serve as powerful climate change messengers. They can create visual narratives that encourage empathy, engage multiple generations, and influence opinions about climate science.

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ORCID iDs

Jill Hendrickson Lohmeier https://orcid.org/0000-0002-0739-663X

Shanna Rose Thompson https://orcid.org/0000-0003-2550-577X

Robert F. Chen https://orcid.org/0000-0003-0625-9323

Stephen Mishol https://orcid.org/0000-0002-1574-5801

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Author Biographies

Jill Hendrickson Lohmeier is an associate professor of research and evaluation in the School of Education and founding co-director of the Center for Program Evaluation at the University of Massachusetts Lowell. Her research interests include informal education, climate change education, educational program evaluation, interdisciplinary collaboration, and learning theory. She earned her MS and PhD at UMass Amherst in Cognitive Psychology.

Shanna Rose Thompson, EdD, is the Center for Program Evaluation Manager and an Adjunct Professor at the University of Massachusetts Lowell. Her research interests include program evaluation, climate change education, alternative education, and inclusive educational practices. She has also served as a project manager on federal grants.

Bob Chen is a professor and the Interim Dean of the School for the Environment at the University of Massachusetts Boston. He received his AB from Harvard University in chemistry and physics and his PhD in oceanography from Scripps Institution of Oceanography and completed a postdoctoral fellowship at the Woods Hole Oceanographic Institution. His research interests include carbon cycling and contaminants in coastal waters, coastal sensor networks, ocean and environmental science education and outreach, and STEM diversification.

Stephen Mishol is an associate professor in the Art and Design Department at the University of Massachusetts Lowell. He received his BFA and MFA from the Massachusetts College of Art. A former Fulbright Grant recipient, Mishol has also been awarded an Artist Resource Trust Grant, and two Artist Fellowships from the Massachusetts Cultural Council for both Painting and Drawing. Mishol is also a co-founder of the Arts Research Collaborative in Lowell, MA.