

Best Practices at Public Events

Dealing with Pseudoscience, Conspiracies, and Hoaxes

Try these practical strategies, informed by research across science education, communications and social science.

Best Practices

Be respectful. Maintain a neutral tone and be pleasant. Mocking someone is not only unprofessional, it is unlikely to change their beliefs. Research suggests it can have the opposite result, with the individual maintaining their world view by rejecting the conflicting information.

Don't argue or debate. For topics where there is scientific consensus, there is no need to engage in a debate, and you do not need to provide a "balanced perspective," which gives the perception the science is unsettled.

Take control of the conversation and move on. Some individuals are looking to disrupt or monopolize the conversation. Allowing an individual to do this does a disservice to the entire group or others attending an event.

Listen to the participant and respond to what they are saying or asking. This approach starts with what the participant knows, acknowledges something they said that is helpful to understanding the concept, and asks them to consider some new evidence that will help deepen their understanding.

Demonstrate evidence and observations. For people who have honest questions, this is an opportunity to demonstrate how scientists know through hands-on, experiential learning, and observations.

Examples

Yes, not everyone is in complete agreement about climate change. The great majority of scientists agree it is occurring. We are presenting the scientific perspective.

Acknowledge that you don't agree and move on.

See practical role-playing video from the Astronomical Society of the Pacific on [Handling Difficult Questions \(and Difficult People\)](#).

*Try the "Yes, and..." approach. (NISE Net) **YES, Earth does look flat to us, AND that's because it's so big that we can't tell that it's actually shaped like a ball. Let's examine this scale model Earth experiment.***

There are several examples of first-hand observations that prove the Earth is round (see resources). However, those who have ingrained positions are unlikely to change their minds; in those cases, acknowledge you don't agree and move on.

See the back for more best practices, examples, and resources.

Do not repeat misinformation without clearly identifying as misinformation. This can have a “familiarity backfire effect” of reinforcing the misinformation.

Less is more. A simple explanation that is easy to process is more cognitively attractive. However, simple does not mean simplistic or talking down to the person.

When you can't avoid mentioning the myth, begin with an emphasis on the facts. Your goal is to increase people's familiarity with the facts.

The scientific case has been closed for thousands of years that the Earth is round. This goes back to the ancient Greeks observing lunar eclipses, to Magellan's crew sailing around the world, and modern astronauts orbiting the Earth. There are also thousands of images from space that show the Earth is a sphere, including Apollo's iconic EarthRise image.

Resources

Astronomical Society of the Pacific: Handling Difficult Questions (and Difficult People) bit.ly/HandlingDifficultQuestions

These tips and role-playing exercises provide practical and proven strategies for handling difficult questions and difficult people at public events. An 8-minute video models the strategies in action. Intended for amateur astronomers giving presentations, the practical strategies are easy-to-use and applicable across a range of science topics.

Cook, J. and Lewandowsky, S. (2011) The Debunking Handbook sks.to/debunk

This concise guide boils the research down into practical guidelines for communicators in all areas, not just climate science, who encounter misinformation.

National Center for Science Education (NCSE) ncse.ngo/dealing-denial

NCSE helps train teachers and community volunteers in approaches that have been proven to reduce conflict and help learners overcome even deeply held misconceptions.

NISE Net Explore Science Toolkits: Tips for leading hands-on activities www.nisenet.org/catalog/explore-science-tips-leading-hands-activities

This document contains tips on addressing misconceptions. Each activity in the toolkit also includes a facilitator guide, with a section on related difficult concepts.

Schottlender, M. (2016) Popular Science: 10 easy ways you can tell for yourself that the Earth is not flat www.popsci.com/10-ways-you-can-prove-earth-is-round

This resource was developed by the Institute for Global Environmental Strategies (IGES) under the NASA Earth Science Education Collaborative, which is supported by NASA under IGES award No. NNX16AE28A. Any opinions, findings, and conclusions or recommendations expressed in this material or are those of the authors and do not necessarily reflect the views of the National Aeronautics and Space Administration.

The best practices and strategies identified in this document were informed by a literature review across science communications, education, and social sciences. Special thanks to the National Informal Science Education Network (NISE Net), NASA Solar System Ambassador Program, and the Astronomical Society of the Pacific for their input.