

ASTR 270

Public Outreach in Astronomy

Class 05 **Questions**

Last Week

- Fundamentals of storytelling (Tuesday)
- Understand & respect your audience (Thursday)

This Week

- *Anyone see the eclipse?!*
- Planetarium Training, Tuesday/Thursday
- Homework 3 (Eclipse Sci-Comm) due Friday
- Pitch 1 DUE TODAY

- Questions in Sci-Comm (Today)
- Analogies in Sci-Comm (Thursday)

A look ahead...

- **Jim will be out of town all next week (April 16 & 18)**
 - Class time open for collaboration with your team/classmates on your Presentations
 - Open practice hours for Planetarium during class
- **Class will be at Theodor Jacobsen Observatory April 23 & 25**

A look ahead...



Can we talk about Questions?

- Who asks them, and when?
- Is science all just questions?
- **Why do we ask them?**
- How can they be a tool in our sci-comm?
- How are they a pain or annoyance?

Questions Can Stress People Out

- Asking Q's is a hard skill, many people nervous to raise their hand
 - Remember this when speaking, fielding Q's... some people need time & encouragement!
- Many people are more nervous about Q's than the presentation: open ended nature, thinking on their feet, people being mean, etc.
 - Remember this when asking Q's... it's really nerve wracking being up here, be kind. Toss people a softball, it helps!

Questions are very personal to me!

- I was terrified to ask Q's as a student (+ didn't go to office hours, struggled to engage w/ a lot of material...)
- When I (finally) got to grad school, set a goal of always asking a Q. This is a “good goal”, because its something I can control regardless of the topic, content, venue...
- It took YEARS to develop this skill!
- It made me an active listener & learner.
- Obviously Q's are central part of being a scientist also.

Questions in Sci-Comm

- Questions as a key part of communication, help make Science Communication into a dialog
- They can be the prompt (e.g. a talk title)
 - A great Q can be engaging, spark critical thinking!
- They can be asked by the speaker (e.g. audience participation)
- They can be asked by the audience (Q/A, audience participation, hecklers)

Use Questions as a tool for engaging your audience

- It can be *WORK* to get them to answer... but it can be really helpful
 - e.g. teenagers... they might not answer, but they're listening!
- Great way to start off a talk or presentation
- Great way to break up a long lecture or video
- don't wait for people to answer "hows it going?"

People LOVE asking Q's

- It's fun, great engagement!
 - “I've never had a chance to ask a scientist a Q!”



Types of Q's

- Open (invite perspectives)
- Closed (e.g. Yes/no, show of hands)
- Leading (the Q suggests the A... can be used in persuasive argument, to evoke reactions, to get to “obvious” answers)
- Rhetorical (i.e. you don't need to answer, can be just to stir thought, evoke motion, etc)

Many *types* of Questions you can ask when teaching

- Knowledge (who, when, what, where...)
- Comprehension (organize facts)
- Application (use of facts to do new things)
- Analysis (describe, classify, outline...)
- Synthesis (combine ideas into new thoughts)
- Evaluation (make decisions, judgements)

Based on this list: <https://uwaterloo.ca/centre-for-teaching-excellence/catalogs/tip-sheets/asking-questions-six-types>

What about hard questions?

- Different types of “hard questions”
 - Very detailed, technical, or obscure Q’s
 - Can be great! But also can be self-congratulating for the asker
 - Often not worth giving super deep answer in Q/A, good for follow-up
 - Sometimes an audience loves nitty gritty...
 - Poorly framed Q’s
 - Really tough in a Q/A, can disrupt your flow, discourage other Q’s.
 - BUT often come from place of genuine interest, don’t just dismiss.

What about hard questions?

- Mean/rude questions
 - Basically like hecklers...
 - You can engage, but you never “win” fighting them
 - They often expect confrontation. Handling these in real time can be scary
 - Audience hates them too, so don't let them derail you!
 - When in doubt: acknowledge, affirm, and move on. YOU are in charge

What about controversies?

- DO: active listening, and respectful answering
- Don't guess or lie
- Don't dictate or demand
- Acknowledge uncertainty
- Validate or embrace the controversy

Activity: Make it a Question

- You all should have an idea for Project 1 *topic...*
- ***Can you frame your topic title as a question?***
- ***Can you think of 2 questions people might ask you after your presentation?***
- Spend ~5 minutes