## 5. How do I make my work accessible to non-scientists?

**Include your personal story**
- Include photos of you doing your work
- Share why your research matters to you on a personal level

**Consider your graphics from a novice’s viewpoint**
- Consider your figures/tables
  - Are axes clearly labeled in units that are relatable by non-experts?
  - If using heat maps, be specific about the variable you’re focusing on
  - Provide familiar landmarks on maps
  - Provide step by step worksheets that guide audience interpretation of graphics/plots
- Ask non-scientists to review your graphics and materials
  - Request that they verbalize their thinking as they look at your materials
  - Take note of what they focus on and how they orient to your figures
  - Ask for suggestions to make it more accessible
- Consider engaging diverse audiences as you present your lessons/activities

## 6. How can this work support my research agenda?

**Align your efforts with broader impacts for proposals**
- Document your work to demonstrate to funders that you have the expertise to achieve the broader impacts you propose
  - Consider publishing your lesson in a practitioners journal like a National Science Teachers’ Association journal
- Develop partnerships and outline your plan ahead of time; use your work for broader impacts in your next proposal
- Can student groups collect samples for your research as part of this lesson? Pilot data for a future proposal?
- Can students/teachers propose research questions that you could incorporate into future proposals? Collaborate and report progress/findings to them over time?

### Using these principles

Increasingly, scientists are being asked to consider broader impacts of their research and participate in education and outreach activities.

These principles were developed from lessons-learned from My Place in Puget Sound, a collaborative curriculum-building effort between learning scientists and ocean scientists.

The questions and suggestions are meant to help guide ocean scientists who are interested in starting new education and outreach efforts and those interested in critical questions to enhance their current work.

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1. Where do I start?
2. How can I develop high-quality materials efficiently?
3. How do I support learning?
4. How do I engage people?
5. How do I make my work accessible to non-scientists?
6. How can this work support my research agenda?
Design from learning goals, not the activity

• Begin with defining 1–3 learning goals to design your lesson; make sure you are clear about what you want to teach.

• Outcomes should be specific and measurable.

• Learning should be relevant to your broad research topic, not the activity.

• Consider partnering with an educator at the outset.

• Education at the college level
  • Select or develop high-quality materials
  • Support staff from a COSEE center
  • A teacher who has interacted with your college

Focus on providing information and evidence and supporting your audience in drawing their own conclusions.

Right answer advocates that may not have one.

Present complex problems to your audience that may not have one right answer.

• Conclude with an explanation of your research findings and references.

The principles shared in this brochure were developed from My Place in Puget Sound, a place-based, culturally responsive curriculum that engages high school and middle school students with aquatic geochemistry research to understand how land use and personal practices affect the presence of organic chemicals in local waters.

The unit was co-created by ocean scientists from COSEE-OLC, SoundCitizen and learning scientists from the University of Washington’s Institute of Science and Math Education. You can learn more at: depts.washington.edu/myplace

How can I develop high-quality materials efficiently?

1. Where do I start?

- Consider starting from a COSEE center
- A teacher who has interacted with education at the college of your choice
- Someone from your college

2. How do I engage people?

- Create multiple ways to be personally involved in the content
- People

3. How do I support learning?

- Connect to your audience’s sense of place
- Science is relevant to describe how the audience can connect your work to people’s everyday lives
- Science is relevant to describe how your research findings and references may not have one right answer
- Conclude with an explanation of your research findings and references.

4. How do I endage?

- Focus on providing information and evidence and supporting your audience in drawing their own conclusions.