A theory-based framework for designing and assessing Broader Impacts activities
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- PROBLEM -
Scientists are not typically trained in non-technical communication or public engagement.

Broader Impacts criterion

- Teaching/training
- Dissemination
- Other societal benefit
- Enhance infrastructure

Example communication/outreach activities
- develop educational materials for use in classrooms (K-12 to graduate)
- conduct campus visits or presentations with under-represented groups
- develop exhibits, public presentations/workshops
- share data + publish in diverse media
- analyze/synthesize research for non-scientists
- develop research/mentoring at multi-user facilities

Imagine that a reviewer encounters competing proposals, each suggesting a different outreach activity listed on the photos above; in this example, let’s also imagine that the aim of the activity is to promote preservation of bird habitats and pro-bird gardening behavior…

IN A NUTSHELL:

- Scientists often struggle to formulate effective Broader Impacts activities, but communication theory offers helpful strategies.
- I suggest that all successful dissemination activities share common characteristics that explain their success.
- Highlighting just five of these characteristics in proposal descriptions could help peer reviewers to compare the potential for impact.

How can a scientist or reviewer compare activities among proposals?

- Or determine if ANY will be “impactful”?

Proposal identifies a specific audience who can use or spread the info; e.g., “Our audience includes leaders and members of specific bird and garden clubs, such as…”

(Khalil & Ardoin 2011, Dickinson & Bonney 2012, Clayton et al. 2013)

2) WHY was this particular activity chosen?

Proposal shows that the scientist is well acquainted with the needs and attitudes of the audience, and the scope of the activity is realistic; e.g., “We will draw on the pro-wildlife attitudes of local landowners to encourage pro-bird gardening habits.” The scientist does not expect to effect behavioral change in a heterogeneous audience by just providing science facts.

Proposition shows vague, information-deficit thinking, with unspoken educational goals; e.g., “We will educate the public…” or “increase general scientific literacy…” or “raise awareness…”

(Gross 1994, Besley & Tanner 2011, Heberlein 2012)

3) WHAT does the activity involve?

Proposal indicates that the activity will seek feedback from the audience promote personal two-way, prompt communication, and identify “what you can do.”


The activity’s communication will be solely one-way to audience, with no knowledge-building among the audience or promotion of self-empowerment.

4) HOW will the activity accommodate attitudes?

Activity will provide direct experience, appeal to sense of “ownership” or “place” (e.g., “my” garden, “my” town, “my” backyard birds) and/or identify the means to achieve a specific behavior; e.g., “We will highlight where landowners can buy the kinds of shrubs that birds use during migration, to plant at their own home…”


Proposal makes no mention of direct experience, consideration of audience identity, or specific educational or behavioral targets.

5) WITH WHOM will the activity be designed or performed?

The scientist has an intra-institutional (e.g., communication department) or extra-institutional (e.g., museum, school, artist, etc.) partner. A social scientist will study the activity’s outcomes.


ULTIMATE GOAL:
To craft a tool that can help proposers build, and reviewers compare, Broader Impacts activities

- SOLUTION -
Broader Impacts Impact Framework

The heart of the BiIF:
- No matter what the Broader Impacts activity is, certain qualities make it “impactful.”
- Comparing qualities can aid peer review.

WHO — specific audience w/potential for domino effects

WHY — achieve outcomes, avoid deficit-model approach

WHAT — communicate self-efficacy & collect feedback

HOW — accommodate audience attitudes with direct experience, identity considerations, and specificity

W/WHOM — integrate w/existing programs & experts

- 3) WHAT does the activity involve?

- 4) HOW will the activity accommodate attitudes?

- 5) WITH WHOM will the activity be designed or performed?