Broader Impacts Infrastructure Summit: Documenting Broader Impacts

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Session Agenda

- Overview of areas for documentation
- Documentation examples
- Purposes and users of documentation
- Discussion of examples
- Additional examples
- Documentation on your campus
- Summary
Areas of Documentation

- Proposal Preparation
- Project Activities
- Institutional Integration
Documentation Required by NSF

• The Project Summary must contain a separate statement on broader impacts.
• The Project Description must contain, as a separate section within the narrative, a discussion of the broader impacts of the proposed activities.
• Annual and Final Reports must address activities related to the Broader Impacts criterion that are not intrinsic to the research.
• The Grant Proposal Guide prescribes a statement regarding Facilities, Equipment and Other Resources available to the researcher and their project for both Intellectual Merit and Broader Impacts.
Documentation for the Institution: Example 1

- Proposal Preparation

  - *GoldSheet* – proposal routing form ISU uses to acquire department, college, and institutional commitments and approvals for extramural funding through grants and contracts
• **Project Activities**
  – Faculty performance reviews

Excerpt from ISU Faculty Handbook

A key tool in the promotion and tenure review process is the position responsibility statement, which describes the individual's current position responsibilities and activities in the following areas: (1) teaching, (2) research and creative activities, (3) extension and professional practice, and (4) institutional service. This statement is used by all evaluators to interpret the extent, balance, and scope of the faculty member's scholarly achievements.
## Parameters to be used when judging faculty member’s achievements:

<table>
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<tr>
<th>Character of scholarship</th>
<th>Audiences for scholarship</th>
<th>Means of communicating scholarship</th>
<th>Criteria for validating scholarship</th>
<th>Means of documenting scholarship</th>
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<tr>
<td>Develops and communicates new understanding &amp; insights. Generates, synthesizes, interprets, critically analyzes, and communicates new knowledge, methods, understandings, technologies, materials, uses, insights, beauty and so forth.</td>
<td>Peers, undergraduate students, graduate students, post-doctoral associates, users, patrons, publics, etc.</td>
<td>Teaching materials and methods, classes, curricula; publications, presentations, exhibits, performances, patents, copyrights, distribution of materials or programs, etc.</td>
<td>Originality, significance, accuracy, replicability, scope, applicability, breadth, depth and duration of influence, persistence of influence or use, adoption by peers, impact or public benefits, etc.</td>
<td>Present evidence that creative intellectual work was validated by peers; communicated to peers and broader audiences; recognized, accepted, cited, adopted, or used by others. In other words, that it made a difference.</td>
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Purposes and Users of Documentation

Why is documentation informative, valuable or useful in each area?
– Proposal Preparation
– Project Activities
– Institutional Integration

• Who uses it?
Proposal Preparation:
Purpose and Users

Aspects of interest:
– Pre-proposal planning
– Proposal development
– Proposal submission

Why:
– Identify faculty interests, partners and resources
– Write an effective plan that will be competitive and integrated with research
– Track information and potential needs/obligations
– Address NSF requirement

Who:
– Faculty, Collaborators, Administrators
Project Activities: Purposes and Users

Aspects of interest:
- Faculty activities
- BI program activities
- Evaluation activities
- Dissemination activities

Why:
- Track and recognize effort in BI areas
- Recognize collaboration and synergistic activities of a program toward institutional priorities
- Inform stakeholders and participants
- Justify budget allocations
Project Activities: (cont’d)

Purposes and Users

Why: (cont’d)

– Demonstrate success and impact
– Address NSF requirements and expectations
– Achieve wider recognition of work, including by public
– Share practices with others
– Capture practices for continued use and improvement

Who:

– Faculty, department chairs, administrators, program stakeholders, NSF, constituents, public, research communities
Institutional Integration: Purposes and Users

Why:
- Assess and characterize activities and needs on campus
- Address NSF expectation
- Understand grant competitiveness and success
- Support faculty
- Inform constituents
- Drive institutional change

Who:
- Administrators, stakeholders
Discussion of Introductory Examples

• Example 1
  – Proposal Preparation – Submission
  – ISU Goldsheet

• Example 2
  – Project Activities – Faculty
  – Faculty Performance Reviews

• How is each used and by whom?
• Does your campus have something similar?
• How might someone find it useful for documenting BI on your campus?
Additional Examples

• Pre-Proposal Planning
  – Catalog of Programs (www.spisu.iastate.edu)
    A comprehensive listing of programs on campus that work in areas of broader impacts and information on how faculty can effectively partner with them.
**Additional Examples (cont’d)**

- **Pre-Proposal Planning**
  - **Broader Impact**
    Wizard, Centers for Ocean Sciences Education Excellence (COSEE), based at Rutgers University ([www.coseenow.net/wizard](http://www.coseenow.net/wizard))
    - Audience
    - Budget
    - Activity
    - Project Description
    - Evaluation

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**Broader Impact Plan for Report Example** Modified May 30th, 2012

The following guidance will help you plan and draft your proposed Broader Impact project. You can share this initial plan with your potential partners.

**Audience**

I have chosen to work with K-12 Teachers because...

Members of my audience often teach photosynthesis using on terrestrial plants. However, it is important for teachers to include phytoplankton when discussing photosynthesis because most of the oxygen in the atmosphere originally came from the activities of photosynthetic organisms in the ocean. Moreover, these primary producers are critical to aquatic food webs. They support entire communities of organisms, including the seafood that we eat, so it is important to understand them. In focusing on satellite images of sea surface temperature and primary production (chlorophyll concentrations), teachers will gain a greater understanding of where the majority of primary production is occurring and how physical factors influence phytoplankton communities.

It is important to work with this group to...

- Foster a scientifically literate population
- Enhance the future workforce
- Increase the ability to solve future challenges (i.e. energy, health, environment, and national security)
- Increase America’s global competitiveness

**Venue Benefits:**

More contact time, deeper understanding, dedicated audience
Additional Examples (cont’d)

• BI Program Activities ([www.gk12.iastate.edu](http://www.gk12.iastate.edu))
  – Program website, brochure or other media
Additional Examples (cont’d)

• Evaluation and Dissemination Activities
  – Publications ([www.metablast.org/publications](http://www.metablast.org/publications))

Enabling Educators to Customize the Game Environment
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Abstract
In the field of educational gaming, a lot of attention has been given to the delivery of educational content and how content is integrated into interactive and entertaining game play. For instance, Gee (2007) concludes that “…in video games, unlike in novels and films, content has to be separated from game play…”

With this in mind, we, the developers of the biology game MetaBlast, have begun integrating a series of features into our game that will enable educators to customize the in-game experience and tailor it to their lesson plans. It is our belief that these features will not only enable teachers to optimally utilize our game in their classrooms, but also allow students to become more engaged in the game.

Most research involving educational games and the classroom focuses on the design of games and how students benefit from and accept games as a part of their educational development. While this is an important hurdle in integrating games with the classroom, a teacher’s acceptance of the game can be an even bigger problem (Egenfeldt-Nielsen, 2004). If a teacher is unable to efficiently and effectively use the game in their classroom, what incentive is there for them to use the game at all? Why should they shape their curriculum around a game that doesn’t allow them to teach the way they want to teach?
Documenting BI on Your Campus

1. What are examples of documenting BI on your campus?
2. Where are there opportunities to document BI?
3. What are obstacles or challenges to documenting BI?
Other Types of Documentation

- Various reports, analyses, surveys, videos, etc.
- Refer to SP@ISU poster or website.
Summary

1. Broader impacts can be documented at many stages, including proposal preparation, project activities, and institutional integration.

2. Each institution will have its own opportunities and challenges for documentation of broader impacts.

3. Faculty, department chairs, deans, central administrators, collaborators, program stakeholders, institution constituents and NSF represent the audiences that will be interested in documentation of broader impacts work.
4. Documentation is important not only to demonstrate BI outcomes but also to foster and promote ideas, dialogue and organizational change.

5. Requirements for documenting broader impacts are likely to become more comprehensive in the future.

6. Communicating with regional and national colleagues to share best practices for documenting broader impacts is essential to enhance infrastructure development and strengthen institutional integration.
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Supported by the NSF I$^3$ Program

- Grant No. HRD-0963584, July 2010 - 2015
- This material is based upon work supported by the National Science Foundation. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.