

**What can COSEE NOW do to help
you achieve broader impacts with
your research?**

Janice McDonnell

Liesl Hotaling

Carrie Ferraro

June 4, 2012



Talk Outline

- Intro to Broader Impacts
- Broader Impacts Wizard
- Supporting materials
- Questions



COSEE – Networked Ocean World (NOW)



Lead Institutions

- Rutgers
- WHOI
- VIMS
- Liberty Science Center
- U. of South Florida
- Monterey Peninsula College
- Word Craft

<http://coseenow.net>

The screenshot shows the COSEE Networked Ocean World website. The header includes the logo and the tagline "Linking ocean scientists and educators in the real and virtual world". A navigation menu lists: Home, About NOW, Achievements, Activity, Blogs, Forums, Groups, Members, Resources, Training and Events, and Contact. The main content area features a featured article titled "OCEAN FRIENDLY SEAFOOD" with an image of a hand holding a fish and a maze. To the right is a "Ocean Gazing podcast" section with a list of episodes: "A rockfish reserve" (11/15), "Only one ocean" (10/10), and "The poetry of our planet" (12/31). Below this are sections for "Latest Posts" and "New Resources". The "Latest Posts" section includes: "Registration Extended to Feb. 17th for Rutgers Ocean Days" (3 days, 1 hour ago), "Black Sea Bass Encounter – Students collect, analyze, and discuss data on local fish population" (1 week, 3 days ago), "Jan. 19th Ocean Lecture & Educators' Night Materials Posted" (1 week, 3 days ago), "Professional Development Workshop for Early Career Scientists" (1 week, 3 days ago), "Cruising down the West Antarctic Peninsula" (1 week, 3 days ago), "ru26d: The bear is in the igloo!" (2 weeks, 1 day ago), "The Fuss About Digital Textbooks" (2 weeks, 5 days ago), "Scientists, Teachers, and Students Find a Unique Teaching Opportunity at Local NJ Restaurant" (2 weeks, 6 days ago), and "Comments on Ocean Lecture & Educator's Night" (2 weeks, 6 days ago). The "New Resources" section includes: "Black Sea Bass Encounter – Students collect, analyze, and discuss data on local fish population" (February 2nd, 2012), "Move It Or Lose It – Fish Migration Game" (April 29th, 2011), "Seasonality in the Ocean" (April 27th, 2011), "Sea 3-D" (April 22nd, 2011), and "The Carbon Cycle Game" (April 20th, 2011). On the right side, there is a login form with fields for Username and Password, a "Remember Me" checkbox, and a "Log In" button. Below the login form is a "Site Contents" section with a search box and a list of categories: Education Materials (24), Events (21), Interactives (2), Movies and Presentations (5), NOW News (27), Ocean Observatory Stories (10), and Resource Guides (6). At the bottom right, there are social media and subscription links: "Subscribe via RSS", "Ocean Gazing listen in", "Facebook become a fan", "Broader Impacts learn more", and "Subscribe via email".

Online Collaboration Tools

COSEE Networked Ocean World
Linking ocean scientists and educators in the real and virtual world

Oscar Schofield @oscar
active 4 months, 3 weeks ago

Cancel Friendship | Mention this User | Send Private Message

Site Contents

Full Name	Oscar Schofield
Position	Professor in Oceanography
Profession	College Educator/Faculty
Affiliation	Rutgers University
Affiliation Type	University/College

I am a Professor of Biological Oceanography. I conduct research in the ocean spanning from the offshore waters of New Jersey to the Arctic and Antarctic. To do this I run a large lab in partnership with Scott Glenn Josh Kohut Robert Chant and Janice McDonnell. This requires me write alot of grants. I publish my research in the literature. My teaching is for undergraduate graduate and post-doctoral researchers. I am interested in trying to make science exciting for the next generation of scientists and engineers as this is critical to our nation and the world. Given research is thinking and exploration I have the best job in the world. For that I feel blessed. I don have a job I have a hobby. There is never a day I don't feel that as I go to work in the morning this it is important and good for the world. As I go home I feel overstimulated thinking about what needs to be done the next day and amazed at what has happened. What a great way to live!

COSEE Networked Ocean World
Linking ocean scientists and educators in the real and virtual world

Carrie Ferraro
Rutgers University - Institute of Marine and Coastal Sciences
@ferraro active 3 days, 1 hour ago

Ferraro joined 1 year, 10 months ago.
No status updates yet.
10 forum topics
1 achievement for 10 points

Activity | Profile | Sites 3 | Friends 34 | Groups 11 | Forums | Achievements 1

Viewing member 1 to 20 (of 34 members)

Order By: Alphabetical

1 2

Ari Daniel Shapiro
active 1 day, 1 hour ago
WNOI

Carrie Armbricht
active 1 year, 10 months ago
University of Maine

Chris Parsons
active 2 weeks, 6 days ago
Word Craft, Monterey, CA

Christine Padilla
active 10 months, 1 week ago
Jersey City Public Schools

COSEE Networked Ocean World
Linking ocean scientists and educators in the real and virtual world

Broader Impacts
Public Group active 1 week, 3 days ago

This group is for those scientists, and the educators who work with them, who are interested in sharing ideas and resources on the development of broader impact statements. Find out how to generate novel ideas for broader impacts activities, how to implement broader impacts activities, and how to measure their impact.

Group Admins

Please create an account to get started.

Username

Password

Remember Me

Log In

Site Contents

Education Materials (21)
Events (2)
Interactives (2)
Movies and Pre NOW News (2)
Ocean Observ Resource Guide

Stay Connected: RSS

Lee! Holzing started the forum topic **Can Science Be Done Without Secrecy?** in the group **Broader Impacts** 1 week, 3 days ago

On Friday, January 27th edition of Science Friday, host Ira Flatow conducted an interesting interview with Michael Nielsen.

Can Science Be Done Without [...]

Britt Holbrook replied to the forum topic **Broader Impact Statement: Example One for Discussion** in the group **Broader Impacts** 2 weeks, 2 days ago

@ChrisP: totally right about the blank slate, though I prefer to call it freedom!

Here's hoping folks will take advantage of it.

Chris Petrone replied to the forum topic **Broader Impact Statement: Example One for Discussion** in the group **Broader Impacts** 2 weeks, 3 days ago

More great information, and quite an interesting "conversation." I think the above advice in the three examples still holds despite the new changes.

A blank slate which can be filled with all of the project [...]

Subscribe Via RSS

Ocean Gazing listen in

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Member Profiles

"Friending" Capabilities

Topical Workgroups & Blogs

Broader Impact Wizard



What is Criterion II or Broader Impacts?



In 1997, NSF attempted to diversify and enrich science research and education in the USA through the Broader Impacts Criterion (BIC), also known as “Criterion Two” or the “Second Criterion”



Why are you interested in Broadening your Impact?

- Involvement in public outreach is intrinsically rewarding
- Increase number of graduate students interested in your research field
- Concerned by reports of science literacy in the U.S.
- It is a required portion of many research proposals
- Other



Have you submitted a proposal with a broader impacts statement?

Please raise your hand

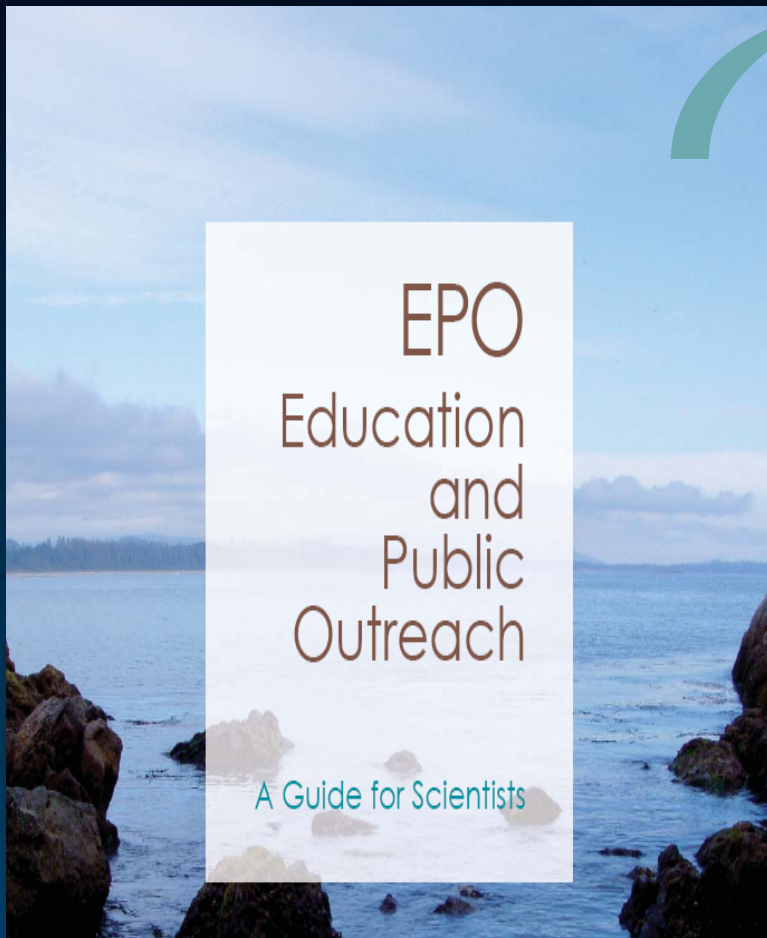


Who did you go to or would you go to for help with this statement?

- No one in particular
- Another scientist
- Education or communication specialist
- Professional organization
- Online search/website
- Other places/people



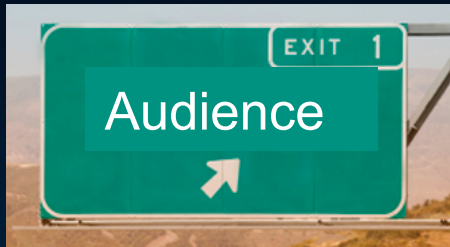
Background



Evolved into COSEE NOW's recommendations for success:

- 1) Develop Core objectives (who and why).
- 2) Connection with an “educational partner”. (i.e. Do not reinvent the wheel.)
- 3) Relate what you are doing to the educational literature.
- 4) Develop an evaluation plan.
- 5) Budget for your proposed work.

1: Audience



2: Budget



5 Steps to Broader Impact Success

3: Activity



5: Evaluation



4: BI Project Description



Ocean Scientist Broader Impact Wizard

Brought to you by COSEE NOW

Broader Impact Wizard Introduction

Share



After viewing the video, please choose one of the following:

> Login

Already have an account?
Continue where you left off.

> Create a new account

Create an account to save your work and retrieve it later.

> Or continue as a Guest

Preview the wizard as a guest user. You will not be able to save your responses without logging in first.

COSEE NOW created the **Broader Impact Wizard** to help you develop a broader impact statement that will satisfy NSF Criterion II and fulfill your interest in communicating your science. The quick and easy five-step process will produce an outline of important points to include in your BI statement and will help frame discussions with your BI partners.

For more information about the wizard and an introduction to constructing effective broader impact projects, please view the video.

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<http://coseenow.net/wizard>

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Broader Impact Wizard Introduction

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WIZARD STEPS


Project Information

 Step 1: Audience

 Step 2: Budget

 Step 3: Activity

 Step 4: Project
Description

 Step 5: Evaluation

Summary

Let's begin

Before we get started, please enter a name for your project. You could use your draft proposal title, the grant title or program or agency's name. This will help you identify to the same project in the future should you wish to return to it.

Project Information

Project Name

Please log in and/or select a v

Funding Agency



Save & Continue >

1: Audience



2: Budget



5 Steps to Broader Impact Success

3: Activity



5: Evaluation

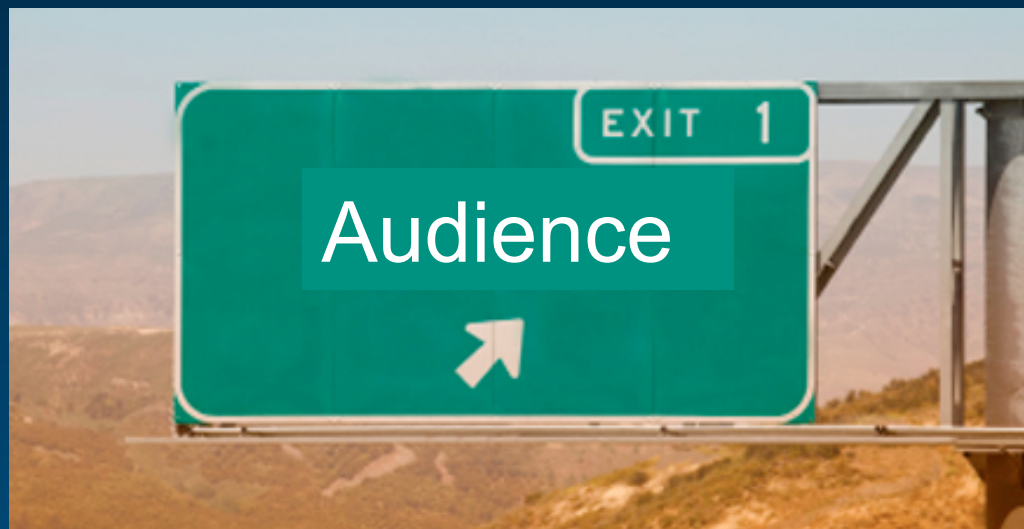


4: BI Project Description



Step 1: Audience

“To begin with the end in mind means to start with a clear understanding of your destination.” – Stephen Covey



Step 1a: Audience

WIZARD STEPS

Project Information

Step 1: Audience

Step 2: Budget

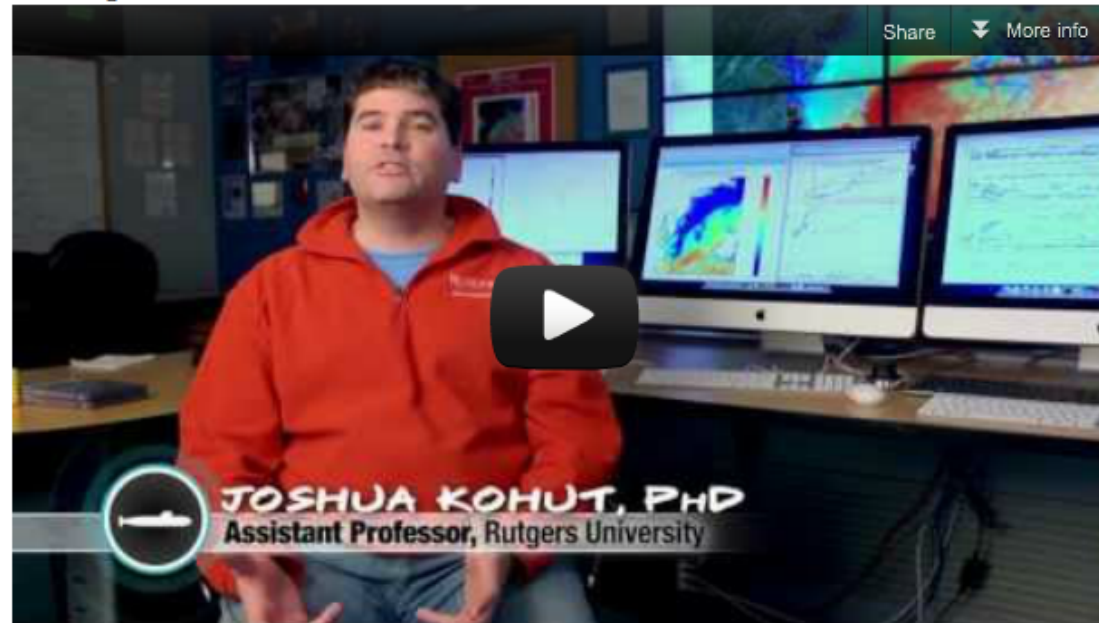
Step 3: Activity

Step 4: Project Description

Step 5: Evaluation

Summary

Step 1a: Audience



Similar to selecting a scientific journal to publish your research, it's important to consider an appropriate audience for your BI efforts. Beginning the BI activity development process with the audience in mind will help frame your thinking and determine the potential partners required to accomplish your goals.

To avoid a common pitfall, we encourage you to work through the wizard focusing on one audience at a time. If you would like to incorporate multiple audiences into your efforts, we recommend going through the wizard once for each audience and then integrating the wizard reports into a single plan.

There are many audience options for you to consider. When deciding which audience to work with, you should contemplate the benefits of the proposed BI activity to society. Listed below are descriptions of audiences scientists commonly address with their BI efforts. After reviewing the options, please *select an audience of interest* from the "Audience" drop down menu at the bottom of the page.

For additional information on the importance of focusing on a specific audience, as well as key audiences to work with, check out the video.

Step 1a: Audience

Government

Higher Education

Industry

K-12 Students

K-12 Teachers

Science Interested Public

Underrepresented / Underserved Populations

Who is this audience?

This audience is defined as policy makers at both the local and national level, including congressman, senators, coastal managers, and political affiliates (staffers). Please note when dealing with this audience that it is not a major focus of COSEE NOW. Therefore, after proceeding through the wizard, we recommend that you consult with agencies such as Coastal States Organization (<http://www.coastalstates.org/>), your local National Estuarine Research Reserve System (<http://www.nerrs.noaa.gov/>), or AAAS (<http://www.aaas.org/>) for help with your broader impact projects.

Why is it important to work with this audience?

- * Demonstrate the linkage between discovery and societal benefit by providing specific examples and explanations regarding the potential application of research and education
- * Integrate research into broader programs and activities of national interest
- * Provide information for policy formulation by Federal, State or local agencies

Please choose an audience to work with

Note that you may only focus on one audience as you proceed through the wizard. However, you may go back to change this audience at any point. If you would like to incorporate multiple audiences into your efforts, we recommend going through the wizard once for each audience and then combining the results.

Later on in the wizard, we will provide suggested activities you can consider to reach your audience.

Government



Which audiences are you most interested in working with?

- K-12 Students
- K-12 Teachers
- Higher Education
- Underrepresented/Underserved populations
- Government
- Industry
- Other



Step 1b: Audience Relevance

WIZARD STEPS

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PROJECT INFORMATION

Project: Test1

Audience: Government

Step 1b: Audience Relevance

Now that you have selected a potential audience, please take a moment to think about how your science might be relevant to this audience.

The following slideshow can help you think about ways to deconstruct your science in order to identify the most relevant elements for a particular audience.



Then, broadly outline in the box below how your science could be relevant to this audience.

My science is relevant
to this audience
because...

Step 1b: Audience Relevance

WIZARD STEPS

Project Information

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Step 2: Budget

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Step 4: Project Description

Step 5: Evaluation

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PROJECT INFORMATION

Project: Test1

Audience: Government

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My science is relevant
to this audience
because...

Step 1c: Audience

WIZARD STEPS

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PROJECT INFORMATION

Project: Test1

Audience: Higher
Education

Step 1c: Audience Venue

Based upon your audience selection, the following is a list of potential venues and/or mechanisms by which you can deliver your message to this audience. Select a venue and proceed on to the next step of the wizard.

Please choose a venue you would like to work in.

- Classroom
- Multimedia (Websites, Podcasts, Print)
- Outside of the Classroom

Description:

Scientists develop or provide guidance on content for undergraduate and graduate students that is conveyed through websites, podcasts, books, newspapers, or CDs

Benefits of working in this Venue:

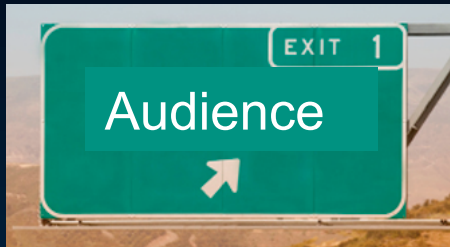
Larger audience, deeper understanding

Challenges working in this venue:

Need to market products to reach the target audience

Later on in the wizard, we will provide suggested activities you can consider to reach your audience.

1: Audience



2: Budget



5 Steps to Broader Impact Success

3: Activity



5: Evaluation



4: BI Project Description



Step 2: Budget

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Step 2: Budget

After selecting an audience and venue, you need to decide what portion of your proposal's total research budget to allocate for BI activities. Factors to consider include whether you will require full funding, utilize in-kind funding, or if are you leveraging an existing program.

In our experience, a BI budget is commonly in the range of 8-10% of your total research budget.

Enter the total budget for your proposed research project:

Total research budget

\$ 0

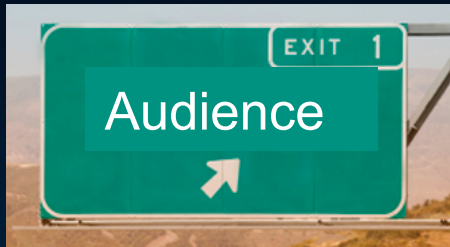
Use the slider to indicate what percentage of the budget you would like to dedicate to your BI activities.



Selected percentage: **0%**

Your total budget for BI activities: **\$0**

1: Audience



2: Budget



5 Steps to Broader Impact Success

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4: BI Project Description



Step 3a: Activity Selection

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Step 3a: Activity Selection

Given the audience and venue you selected earlier, the following are a few suggested activities for you to consider.

Items that are beyond your specified budget are grayed out.

Please choose an activity you would like to pursue

- Hire a professional writer and/or photographer to accompany you in lab or field work and post the information on a website for students and teachers
Time Budget Range: \$10,000 to \$100,000
Materials Budget Range: \$0 to \$0
- Host "Live From" calls or video chats from your lab or research cruises
Time Budget Range: \$0 to \$10,000
Materials Budget Range: \$0 to \$10,000
- Work with media producers (video and/or radio) to develop a product on your topic
Time Budget Range: \$0 to \$5,000
Materials Budget Range: \$0 to \$50,000
- Write a science column for your institutions newspaper or do radio interviews with your institutions radio station (repeating or single time)
Time Budget Range: \$0 to \$5,000
Materials Budget Range: \$0 to \$0
- Work with your university newspapers/magazines on student friendly material based upon your topic
Time Budget Range: \$0 to \$10,000
Materials Budget Range: \$0 to \$0
- Other

If you have another activity in mind, you can enter it here

At this point, you can only make one selection for one activity, however, you may go back to change this at any point. If you would like to include multiple audiences or activities into one BI statement, please work through the wizard for each additional audience and/or activity separately and then combine the individual reports. For assistance with this process, consult with your BI partner.

Reference Literature

Just as your research must be grounded in the literature, so should your BI project. In your summary report, you will receive a list of literature related to dealing with this audience and activity.

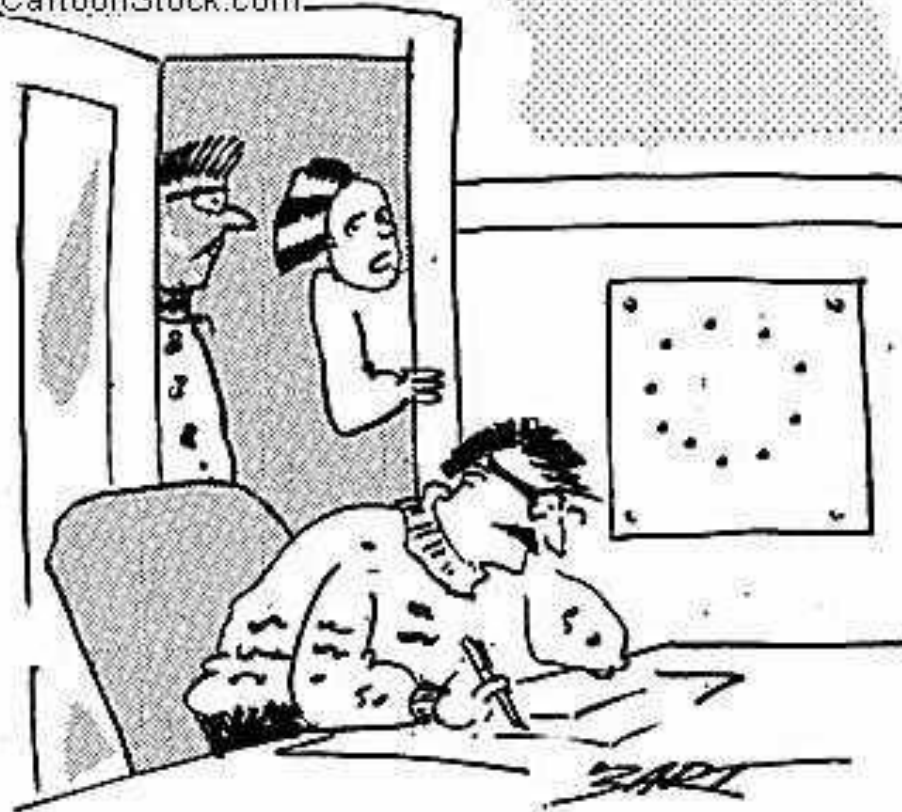
What type of education and outreach activities have you been involved with?

- Teacher professional development workshops
- Public lectures
- Classroom visitations/presentations
- Participated in mentorship programs
- Worked with a science center
- Collaborated with a member of industry
- Offered research or expertise to support a law or bill



Don't reinvent the wheel -- leverage existing infrastructure and relationships

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www.CartoonStock.com



*"Ralph is doing a preliminary study
of re-inventing the wheel."*



Step 3b: Activity Partner(s)

WIZARD STEPS

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Activity: Host "Live From" calls or video chats from your lab or research cruises

Step 3b: Activity Partner(s)

Working with education and public outreach partners will allow you to gain access to professionals who have expertise in translating and presenting your science to the appropriate audience. For example, these partners could include an established program (i.e. your university's internship program) or an individual who specializes in education (i.e. COSEE members, museum staff or classroom teachers) or mass communication (media producers, web design, or photographers).

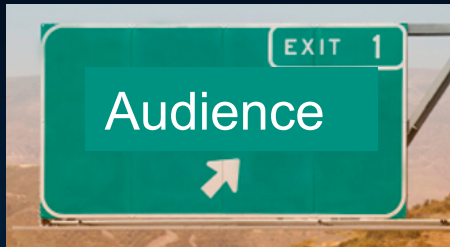
If you have already identified a potential partner, enter their name(s) here.

Project Partner(s)

If not, you can send an inquiry to wizard@coseenow.net for assistance in identifying a potential partner for your desired activity.



1: Audience



2: Budget



5 Steps to Broader Impact Success

3: Activity



5: Evaluation



4: BI Project Description



Step 4: BI Project Description

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Activity: Host "Live From" calls or video chats from your lab or research cruises

Step 4: BI Project Description

Think about what success will look like and how you will demonstrate success in your BI project. Then, use this information to answer the question below.

SMART Goals & Objectives

As you develop your goals, objectives and tasks, try to make them *SMART*. A SMART objective is:

Specific

Measurable

Audience-based

Relevant

Time-bound

Describes an action, behavior, outcome, or achievement that is observable. (e.g., follow Department of Ecology's protocol in determining the ordinary high water mark; volunteer in community shoreline cleanups; incorporate educational materials on aquatic invasive species).

Action words also serve to group the objectives into specific learning domains.

Adapted from [Designing Education Projects: A Comprehensive Approach to Needs Assessment, Project Planning and Implementation, and Evaluation](#), Second Edition, NOAA (2009). ([link](#))

Need help writing your goals and tasks?

[Check out some helpful questions to guide the development of your goals, objectives and tasks](#)

[View some examples of action words that can be used to help define your goals, objectives and tasks](#)

[View some examples of completed project descriptions](#)

Please describe your Broader Impact project, including goals and tasks

Step 4: BI Project Description

WIZARD STEPS

Step 4: BI Project Description

SMART Goals & Objectives

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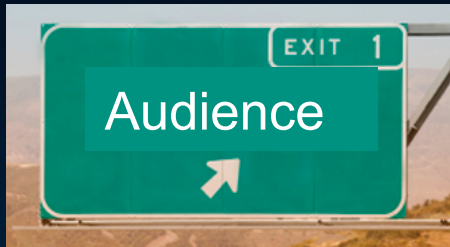
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Need help writing your goals and tasks?

- 1 Check out some helpful questions to guide the development of your goals, objectives and tasks
- 2 View some examples of action words that can be used to help define your goals, objectives and tasks
- 3 View some examples of completed project descriptions

1: Audience



2: Budget



5 Steps to Broader Impact Success

3: Activity



5: Evaluation



4: BI Project Description



Step 5: Evaluation

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Activity: Host "Live From" calls or video chats from your lab or research cruises

Step 5a: Evaluation

Just as you collect data in your scientific research, you need to collect data on the efficacy of your BI project, which means you need to plan for a project evaluation. Depending on your needs and budget, an evaluation can be simple or sophisticated and you can do it on your own or hire a professional evaluator to help you. For your proposal, you will not need in depth detail about your evaluation plans but you should demonstrate that you have considered how you plan to evaluate the BI component of your project.



A project evaluation plan outlines how you will systematically collect data from your audience to address questions such as:

- Was this BI project successful? To what extent did the project meet stated goals and objectives?
- Was this BI project valuable to your audience? Were your BI activities appropriate for them?
- Did your audience change as a result of this BI project, and in what ways (i.e. knowledge, skills, or behavior)?

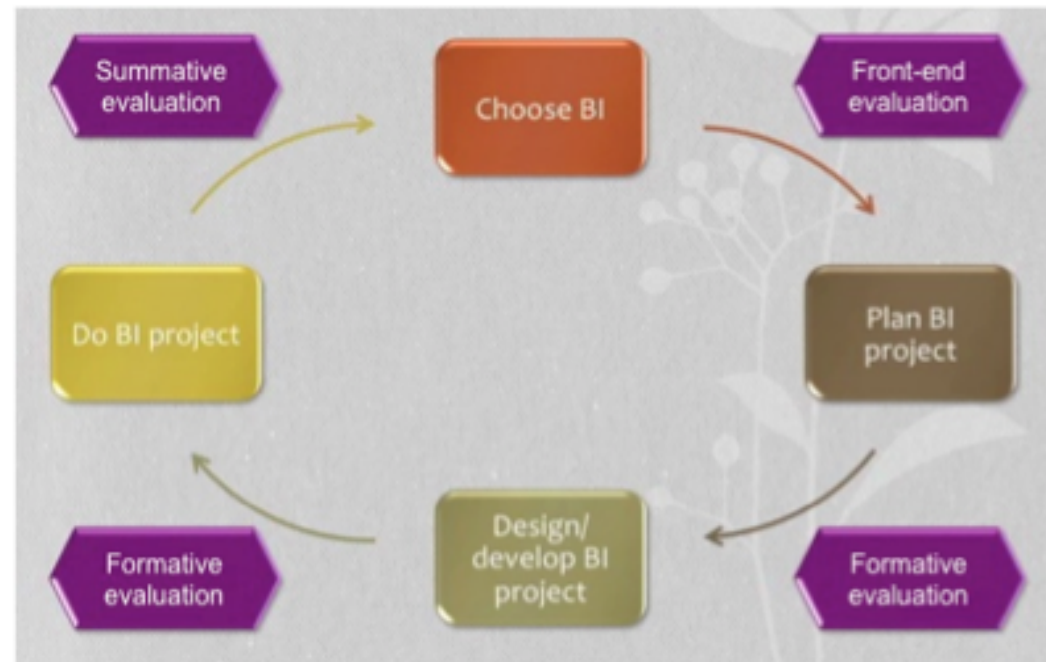
Your questions, audience, and where you are in the project planning/implementation process will determine what type of evaluation you will undertake. For most small projects, you will do only a summative evaluation, which helps determine if the project worked and its value to your audience. However, if you want to use data to inform your BI strategies, then you would do front end or formative evaluation. Front-end evaluation helps you get to know the audience and formative evaluation gives insight into whether what you are doing works for them.

Step 5: Evaluation

Evaluation Types

Check off the types of evaluation(s) that you will need to do for this project

- Front-end/Needs Assessment:** Similar to a pre-test, it is done to determine what your audience wants, knows, needs and/or can do. This helps you get to know your audience and plan accordingly.
- Formative evaluation:** Similar to a mid-term exam or regular quizzes, it is done throughout project design and implementation to help you improve your project as it progresses. This is especially useful with an audience you don't know well, when trying something new or improving an existing program or project.
- Summative evaluation:** Similar to a final exam, it is done after implementing a project to document successes, failures and lessons learned. Using this information, you can report out to your funder the overall success of your BI project. (Usually required)



Step 5: Evaluation

WIZARD STEPS

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PROJECT INFORMATION

Project: Test1

Audience: Higher Education

Venue: Multimedia (Websites, Podcasts, Print)

Activity: Host "Live From" calls or video chats from your lab or research cruises

Step 5b: Evaluation

Your BI project evaluation plan should be clearly stated in your BI statement. Below are examples of BI evaluation statements that COSEE NOW members have used in proposals:

Example 1: An external evaluator will conduct a formative and summative evaluation of this project. Throughout the project we will measure students' knowledge of climate change and feelings about what they can do about it. Survey data collected will help inform decisions regarding improving the project for students and the final survey will determine how students have changed over time.

Example 2: To ensure that a correct and effective message is reaching this audience, this program will be evaluated by an external evaluator from COSEE NOW. The evaluator will perform a front-end evaluation (probably using interviews) at the beginning of the EPO project to determine the teachers' backgrounds and attitudes regarding climate change. At the end of the project the summative evaluation will focus on changes to teachers' attitudes and the impact of the project on their teaching.

Find an Evaluator

We recommend that you consult an experienced program evaluator to guide you through this process. If you need help finding an evaluator, check out the membership database of the [American Evaluation Association](#).

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Broader Impact Plan for Report Example Modified May 31st, 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 affect 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

Venue Challenges:

Needs to fit in with standards and testing (less flexibility), smaller audience

Activity

To work with this audience, I have chosen to **Work on on- or offline research-based educational materials (curricula or lessons) focusing**

Suggested Next Steps:

Partners

To further ensure the success of this project, I will work with experienced partners, including **COSEE NOW**. I have contacted and discussed this project with them and they have agreed to participate.

Objective

The following is my main objective for this activity

Broader Impacts Description

We will partner with Centers for Ocean Science Education Excellence Networked Ocean World (COSEE NOW) for the development and

Scientists input/
data

Helpful info
on audience

Activity notes

Objectives
Drafted in Wizard

Evaluation

To measure the success of this project, I will also perform the following assessments with the help of an external evaluator:

- **Formative evaluation:** Conducted throughout project design and development to guide improvements during piloting/prototyping of something new, or to improve an existing program or project.
- **Summative evaluation:** Conducted at the end to document successes, failures and lessons learned.

Budget

A good rule of thumb is that the BI component should be 5-10% of your total project budget. Of course, a more advanced BI plan will require a larger budget. Remember to include money for logistical support when running a program.

My budget for the broader impact activity will be approximately **\$10,000**

The evaluation budget should be 10% of the broader impact portion of your budget, or about **\$1,000**.

Final Notes

The steps that you have just completed cover this ground but as a reminder these are questions posed in all solicitations. Be sure to keep these in mind when composing your broader impact statement.

- How well does the activity advance discovery and understanding while promoting teaching, training, and learning?
- How well does the proposed activity broaden the participation of underrepresented groups (e.g., gender, ethnicity, disability, geographic, etc.)?
- To what extent will it enhance the infrastructure for research and education, such as facilities, instrumentation, networks, and partnerships?
- Will the results be disseminated broadly to enhance scientific and technological understanding?
- What may be the benefits of the proposed activity to society?

Relevant Literature

For more information on how to meet the needs of the audience you selected, as well as related research on the activity you are planning on pursuing, we suggest reviewing the following references, as you may find some of these helpful to include in your proposal.

1) Bransford, J, Brown, A., and Cocking, R. (1999) *How People Learn: Brain, mind, experience, and school*. Washington, DC: National Academy Press.

Evidence from many branches of science has significantly added to our understanding of what it means to know, from the neural processes underlying learning to the influence of culture on what people see and absorb. "How People Learn" examines these findings and their implications for what we teach, how we teach it, and how we assess what our children learn. The book uses exemplary teaching to illustrate how approaches based on what we now know result in in-depth learning. This new knowledge calls into question concepts and practices firmly entrenched in our current education system.

2) Wiggins, G.P. and McTighe, J. (2005) *Understanding by Design*. Alexandria, VA: ASCD.

What is understanding and how does it differ from knowledge? How can we determine the big ideas worth understanding? Why is understanding an important teaching goal, and how do we know when students have attained it? How can we create a rigorous and engaging curriculum that focuses on understanding and leads to improved student performance in today's high-stakes, standards-based environment? Authors Grant Wiggins and Jay McTighe answer these and many other questions in this second edition of *Understanding by Design*.

Evaluation
Plan

Reminder
about NSF
criterion II

Literature
review



Invitation

Please try out the wizard and send us your comments, including:

- time required to work through the wizard
- usability
- background information/support
- overall satisfaction with the tool,
- any other suggestions for improvement

Send your feedback to wizard@coseenow.net



Questions?

<http://coseenow.net/wizard>



Coming Soon: Supporting Materials

Pre-Award Materials

- EPO Guide
- NSF's Representative Activities
- References
- Evaluation Manuals

Post Award Materials

- Case studies
- Next Steps
- Additional funding for E&O activities
- Journals to publish the results of your work



Bernhard Peucker-Ehrenbrink



SUMMARY

- COSEE Networked Ocean World (COSEE NOW) has created a suite of new online resources for scientists, which compliments and enhances our existing social networking portal (<http://coseenow.net>)



SUMMARY

- COSEE Networked Ocean World (COSEE NOW) has created a suite of new online resources for scientists, which compliments and enhances our existing social networking portal (<http://coseenow.net>)
- The “*BI Wizard*” provides a user interface that guides users through a series of well-defined steps necessary for the construction and implementation of a broader impact statement



Questions?

<http://coseenow.net/wizard>



Thank you!

