LOGIC MODEL

• A visual depiction of what a project does and what changes it is expected to bring about.

Learn more:
  – Readings, template, examples: www.uwex.edu/ces/pdande/evaluation/evallogicmodel.html
What new and existing resources will be used to support the project?

- NSF funding
- Faculty
- Advisory panel
- Industry partners
- In-kind contributions

What are the main things the project will do?

- Establish regional partnerships
- Develop curriculum
- Conduct workshops
- Provide research/field experiences
- Establish articulation agreement

What products will be created? (typically, things that can be directly observed and that will continue to exist after the project ends)

- Curriculum materials developed
- Policies created
- Publications issued
- New certifications
- Tools/resources

What will occur as a direct result of the activities and outputs? (typically, changes in knowledge, skills, attitudes)

- Faculty learn to use instructional technology
- Students gain technical skills
- Students’ interest in technical careers increases

What results should follow from the initial outcomes? (typically, changes in behavior, policies, practice)

- Students persist in their programs
- Faculty improve instruction
- Colleges adopt and implement project-developed curriculum

What results should follow from the initial outcomes? (typically, changes in broader conditions)

- Increased regional economic vitality
- Increased diversity in the technical workforce
- A more highly skilled and adaptable workforce
LOGIC MODEL - Example

**Inputs**
- This is what you are investing... funding, partnerships, staff time, facilities

**Activities**
- This is what you do to fulfill your projects mission
- Develop promotional materials
- Promote REU site online and from Booths at SACNAS, GSA and NABG
- Minority Recruitment Lecture Series

**Outputs**
- This is what is produced
- Advertising flyers Webpage
- Personal connects, Contact lists
- Speakers visiting Physics Dept at HBCUs and HSIs

**Outcomes (Short Term)**
- These are the benefits or changes that will occur as a result of your actions
- Annually, EPO staff will recruit an intern applicant pool that contains at least 15% racial/ethnic minority and 50% female applications.

**Outcomes (Mid term)**
- These are the benefits or changes that will occur as a result of your actions
- Annually, EPO staff will ensure the population of interns accepted to the program is more diverse than the population of geoscience faculty.

**Outcomes (Long term)**
- These are the benefits or changes that will occur as a result of your actions
- Within 15 years, the diversity of the geophysics community will increase by at least 10%

Created in Omni Graffle

NSF REU Award 0.5 Internal FTE
Below are examples the types of information that might appear under each header of the logic model. When developing a project logic model, be as specific as possible in articulating the components of the model. For example, a project-specific short-term outcome might be phrased as “learners will be able to install, maintain, and troubleshoot high-vacuum systems.”

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SMART OUTCOMES

- **Specific:** Be precise about what you are going to achieve (who, what, etc)
- **Measurable:** Quantify the objectives with a focus on “how much"
- **Achievable:** Should be attainable within a given time frame and available resources
- **Realistic:** Align with the needs of the target audience
- **Time-Specific:** State when you will achieve the objective
SMART OUTCOMES

What you will do
With whom
When
What you expect

Process
Impact
SMART OUTCOMES

What you will do: Use online tools (e.g. webinars, SLACK, Facebook, and blogs) to deliver content and facilitate connections.

With whom: IRIS Interns

When: Annually

What you expect: at least 80% of interns will agree or demonstrate they were connected to the other interns in a beneficial way.

Annually, 80% of interns will agree or demonstrate they were connected to the other interns in a beneficial way through the use of IRIS cyber-infrastructure.
SMART Objective Editor

**Time-bound:**
Est. start-date 08 / 2015 (MM/YYYY)  
Est. end-date 08 / 2015 (MM/YYYY)

**Specific:**
Who will do the work: Jim Bob (in the truck)

**Measurable, Achievable, Realistic:**
will **decrease** the **number of stumps in the yard**
what will be measured

from 1  
target 0
baseline

Click the Preview SMART Objective button below to generate the SMART objective. Then, copy the objective to GARS or a word processor. It will NOT be saved.

**SMART Objective**
Between 08/2015 and 08/2015, Jim Bob (in the truck) will decrease the number of stumps in the yard from 1 to 0.

http://dhhs.ne.gov/publichealth/Pages/minorityhealth_smartedit.aspx
Permission to Take Part in a Human Research Study

Title of research study: [insert title of research study here with protocol number, if applicable]

Investigator: [insert name of principal investigator]

Why am I being invited to take part in a research study?
We invite you to take part in a research study because ____________. [Fill in the circumstance or condition that makes subjects eligible for the research.]

What should I know about a research study?

- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Who can I talk to?
If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at [insert contact information for the research team]

This research has been reviewed and approved by an Institutional Review Board (“IRB”). You may talk to them at (303) 735-3702 or iradmin@colorado.edu if:

- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You have questions about your rights as a research subject.
**FORMATIVE vs. SUMMATIVE**

- Formative assessments provide students and the program with feedback prior to and during the instruction/intervention.
- Summative assessments occur at the conclusion of a program and measure the accomplishments of the program, generally tied to the program’s objectives/outcomes.
Frontend Examples

• Interviews
• Grit / perceived confidence / Self-Efficacy
• Communication skills
• Pre/post skill surveys
  – Graph reading
  – Paper reading
  – Nature of Science / Science Literacy
  – Process of Science
Midway Examples

- Surveys
- Weekly logs / Blogs
- White board talks
- Mentor reflection or mentor/mentee discussion
End of Program Examples

- Interviews
- Reflection surveys
- URSSA
- Longitudinal surveys/tracking
Links

• URSSA: http://www.colorado.edu/eer/research/undergradtools.html

• http://scied.ucar.edu/soars/reu/running-an-reu/program-evaluation

• http://serc.carleton.edu/NAGTWorkshops/undergraduate_research/reu_assessments.html
Two Types of Objectives

• Process objectives
• Impact objectives
PROCESS OBJECTIVES

• Describes specific numbers/types of activities to be completed by specific dates
IMPACT OBJECTIVES

- The intended and unintended effects on the behavior, attitude, skills, interest, and knowledge (BASIK) of the participants
  - **Behavior:** Evidence of behavior change includes participants’ self-reported intentions to change their behavior and data from longitudinal follow-ups showing whether such behavior change has occurred.
  - **Attitudes:** Impacts in this category encompass changes in long-term perspectives toward a STEM topic, a group of people, species or ecosystem, activities, theories, or careers.
  - **Skills:** Either entirely new ones or the reinforcement or practice of developing skills that tend to be procedural aspects of knowing, as opposed to the more declarative aspects of knowledge impacts.
  - **Interest:** Engagement and/or interest in a particular scientific topic, concept, phenomena, theory, or career central to the project. Impacts in this category capture the excitement and involvement of participants in a topic, area, or aspect of STEM.
  - **Knowledge:** Awareness, knowledge, and/or understanding of a particular scientific topic, concept, phenomena, theory, or career central to the project that can be stated by participants in their own words and/or actions, whether that is during, immediately after, or long after, the experience.