OUTCOME evaluation step-by-step

The webinar will begin at 1 p.m. Eastern time

Introductions

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Christina Titus  
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CCTA  
Centers Collaborative for Technical Assistance

EvaluATE  
evalu-ate.org
WEBINAR
Outcome Evaluation: Step-by-Step

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

www.connectedtech.org/ccta.html | atecenters.org/ccta

CCTA | CENTERS COLLABORATIVE FOR TECHNICAL ASSISTANCE

NATIONAL CONVERGENCE TECHNOLOGY CENTER
Collin College (lead)

SOUTH CAROLINA ADVANCED TECHNOLOGICAL EDUCATION CENTER OF EXCELLENCE
Florence-Darlington Technical College

FLORIDA ADVANCED TECHNOLOGICAL EDUCATION CENTER
Hillsborough Community College

City College of San Francisco
Materials

Slides    Handout    Recording

www.evalu-ate.org/webinars/mar19

This material is based upon work supported by the National Science Foundation under grant number 1600992.

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the presenters and do not necessarily reflect the views of NSF.
Process v. Outcome Evaluation

Evaluation of the activities that a project carries out and the materials or products it creates or uses in service delivery vs. Determination and evaluation of the changes a project brings about

- Quality of program content
- Quality of program materials or facilities
- Extent of reach to intended and other audiences
- Adequacy and logic of program design
- Level of participant satisfaction

CHANGES in
- Attitudes
- Knowledge
- Skill
- Competence
- Behavior
- Social or economic conditions
Outcome Evaluation Steps

1. Define intended outcomes
2. Identify evaluation questions
3. Plan for data collection and beyond
4. Collect and analyze data
5. Interpret results (answer evaluation questions)

Webinar Sections

1. Define intended outcomes
   - Identify evaluation questions
2. Plan for data collection and beyond
   - Collect and analyze data
3. Interpret results (answer evaluation questions)
1 Define Intended Outcomes and Identify Evaluation Questions

Outcome

Any change resulting from project activities and outputs
Activity

What a project does, the actions it takes

Goal

An achievement being sought
May focus on activities or outcomes
The project will deliver four webinars per year, serving 1,000 people.

Webinar participants will improve their evaluation knowledge and practices.

Real goal statements from real NSF-funded projects.
The goal of the project is to **increase the supply** of qualified cybersecurity professionals for industry and government.

**Outcome: More qualified workforce**

The goal of this project is to **develop an associate's degree** in mechatronics, incorporating pathways from local high schools into the degree offering at three partner colleges.

**Activity: Create degree program**
This project has the overarching goal of increasing awareness of opportunities in science, technology, engineering, and mathematics (STEM) disciplines for women and underrepresented minorities.

**Outcome:** Change what people know about STEM disciplines

The project’s goal is to build a sustainable program to enhance process technology education by introducing new hands-on opportunities through use of light-weight extremely low-cost miniature industrial equipment with a small footprint that fits on a standard desktop or which can be taken home for use in homework assignments.

**Activity:** Create program, use new equipment
INTENDED OUTCOMES

specific, realistic
statements about what is expected to change for individuals or groups relevant to the need that the project is designed to address

Current wind energy workforce:

CASE Growing a New Generation of Energy Technicians and Professionals
Projected retirement within 10 years:

CASE Growing a New Generation of Energy Technicians and Professionals

1) Increase academic rigor
2) Design and activate career pathways
3) Enhance recruitment, retention, and placement efforts

CASE Growing a New Generation of Energy Technicians and Professionals
Project Goals

1. **Improve** and **expand academic rigor and relevance** across core technology curriculum and wind energy technology-specific curriculum.

2. **Design and put into action** wind/renewable energy career pathways.

3. **Enhance and expand** recruitment, retention, and placement efforts across technology programs.

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**Project actions = Activities**

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**Logic models are a great tool for evaluation planning!**
**ACTIVITIES**

- Improve and expand academic rigor and relevance across curriculum
- Design and put into action wind/renewable energy career pathways
- Enhance and expand recruitment, retention, and placement efforts

**SHORT-TERM OUTCOMES**

**MID-TERM OUTCOMES**

**LONG-TERM OUTCOME**

"The American energy sector needs to attract and retain a new generation of human capital."
WEBINAR
Outcome Evaluation: Step-by-Step

3/21/2019

ACTIVITIES
- Improve and expand academic rigor and relevance across curriculum
- Design and put into action wind/renewable energy career pathways
- Enhance and expand recruitment, retention, and placement efforts

SHORT-TERM OUTCOMES
- Instructors update energy technology course content and methods
- Students utilize career pathways
- Number and diversity of students who enroll and persist in energy programs increase

MID-TERM OUTCOMES
- Students gain competencies needed by energy industry employers

LONG-TERM OUTCOME
- Increased supply of qualified technicians to regional wind and renewable energy employers
Focus of OUTCOME EVALUATION

SHORT-TERM OUTCOMES
- Instructors update energy technology course content and methods
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MID-TERM OUTCOMES
- Students gain competencies needed by energy industry employers

LONG-TERM OUTCOME
- Increased supply of qualified technicians to regional wind and renewable energy employers

AVOID
- Did students use career pathways established by the project?
  - Yes – No questions
Outcome Evaluation: Step-by-Step

Question 1:
To what extent are students using career pathways established by the project?

Outcome Evaluation Question

To what extent are students using career pathways established by the project?

SHORT-TERM OUTCOMES
Instructors update energy technology course content and methods
Students utilize career pathways
Number and diversity of students who enroll and persist in energy programs increase

MID-TERM OUTCOMES
Students gain competencies needed by energy industry employers

LONG-TERM OUTCOME
Increased supply of qualified technicians to regional wind and renewable energy employers

AVOID:
Number questions

How many students enrolled in the program?
Outcome Evaluation: Step-by-Step

**Outcome Evaluation Question 2**
What impact is the project having on student diversity, enrollment, and persistence?

**Outcome Evaluation Question 3**
To what extent are students gaining competencies needed by energy industry employers?
Outcome Evaluation Question 4

To what extent is the project increasing the supply of qualified technicians to the local wind and renewable energy employers?

Summary

- Clearly define intended outcomes.
- Identify multiple levels of outcomes.
- Frame evaluation questions around outcomes.
- Ask evaluation questions that allow for a range of conclusions.
- **Bonus:** Always include an evaluation question like this:
  “What are the project’s unintended positive or negative side effects or outcomes, if any?”
Resources

Getting to Outcomes™
Logic model template, online course, and more
Evaluation Questions Checklist
Book chapter by Michael Quinn Patton on defining outcomes

Planning for Data Collection and Beyond
For each evaluation question, specify:

Indicators

What will be measured in order to answer evaluation questions
Data Sources & Methods

Where information related to indicators will be obtained and how

People

Who will be responsible for which aspects of data collection
Timing

When data will be collected and with what frequency

Analysis

How collected data will be transformed into usable information
Interpretation

How evaluation findings will be translated into conclusions

For each evaluation question, specify:

✓ Indicators
✓ Data sources and methods
✓ People
✓ Timing
✓ Analysis
✓ Interpretation
A matrix is a great way to show relationships between data collection plan elements

Outcome Evaluation Question 1:
To what extent are students using career pathways established by the project?

<table>
<thead>
<tr>
<th>INDICATOR</th>
<th>DATA SOURCE &amp; METHOD</th>
<th>PEOPLE</th>
<th>TIMING</th>
<th>ANALYSIS</th>
<th>INTERPRETATION</th>
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<tbody>
<tr>
<td>Number of high school students who are dual enrolled</td>
<td>Institutional data</td>
<td>Project director obtains from institutional research office</td>
<td>End of each semester</td>
<td>No analysis – use raw numbers</td>
<td>Comparison against performance target using rubric</td>
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<tr>
<td>Number and percentage of dual-enrolled students who intend to pursue degree and certificate programs</td>
<td>Survey of dual-enrolled students</td>
<td>External evaluator develops survey and conducts analyses; faculty administer survey</td>
<td>End of each semester</td>
<td>Descriptive statistics, disaggregated by demographic characteristics; inductive coding of qualitative data</td>
<td>Comparison against performance target using rubric</td>
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The evaluation will include a survey of students and secondary analysis of institutional data.
But what will be measured?

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<tr>
<td>Number of high school students in dual enrollment courses</td>
<td>Institutional data</td>
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The evaluation will include a survey of students and secondary analysis of institutional data.
If an “outcome” is not caused by the intervention, it is NOT an outcome. It’s merely a coincidence.

—Jane Davidson

**Outcome**
change resulting from project activities

| effect | cause or contributor |
**Linking cause and effect**

- Use control or comparison groups
- Scan environment for other influences
- Ask participants directly

**Links cause and effect**

How likely are you to seek a job in the renewable energy field?
- Not at all likely
- Somewhat likely
- Very likely
- Extremely likely

How much impact has this course had on the likelihood that you will seek a job in the renewable energy field?
- Major negative impact
- Moderate negative impact
- Slight negative impact
- No impact
- Slight positive impact
- Moderate positive impact
- Major positive impact

Asks about both magnitude and direction of effect
Summary

✓ Align data collection to evaluation questions.
✓ Develop concrete plans for analysis and interpretation.
✓ Build cause and effect into data collection when possible.

Resources

Getting to Outcomes™

Data Collection Plan Matrix

Variety of resources on causation
Interpreting Results

Percentage of women in wind energy program

15%

F = Fictional
Percentage of women in wind energy program

- Target: 15%
- 2% of wind turbine technicians in the U.S. are women

Interpretation requires comparison:
- Comparison or Control Groups
- Performance Targets
- National Data
- Historical Data
- Standards
- Stakeholder Expectations

R = Real  F = Fictional
### Outcome Evaluation Question 2:
What impact is the project having on student diversity, enrollment, and persistence?

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Target</th>
<th>Performance targets from project proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of women completing program</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Number of veterans enrolled</td>
<td>5-10</td>
<td></td>
</tr>
<tr>
<td>Percentage of underrepresented minority students completing program</td>
<td>10%</td>
<td></td>
</tr>
</tbody>
</table>

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### Met or not met (Yes/No) and Continuum

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Original Target</th>
<th>Below Target</th>
<th>On Target</th>
<th>Above Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of women completing program</td>
<td>10%</td>
<td>Less than 8%</td>
<td>8-12%</td>
<td>More than 13%</td>
</tr>
<tr>
<td>Number of veterans enrolled</td>
<td>5-10</td>
<td>Fewer than 5</td>
<td>5-10</td>
<td>More than 10</td>
</tr>
<tr>
<td>Percentage of underrepresented minority students completing program</td>
<td>10%</td>
<td>Less than 8%</td>
<td>8-12%</td>
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Outcome Evaluation: Step-by-Step

3/21/2019

Outcome Evaluation Question 2:
What impact is the project having on student diversity, enrollment, and persistence?

<table>
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<th>Indicator</th>
<th>Low Impact</th>
<th>Minimal Impact</th>
<th>Moderate Impact</th>
<th>High Impact</th>
</tr>
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<tbody>
<tr>
<td>Percentage of women completing program</td>
<td>2% or less</td>
<td>3-5%</td>
<td>6-12%</td>
<td>More than 13%</td>
</tr>
<tr>
<td>Number of veterans enrolled</td>
<td>2 or fewer</td>
<td>3-5</td>
<td>5-10</td>
<td>More than 10</td>
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<td>Percentage of underrepresented minority students completing program</td>
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<td>3-5%</td>
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Overall, the project had a high impact on the diversity of enrolled students, as determined by comparing the project results with rubrics established by project stakeholders.

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Rubrics can be qualitative, too

**INDICATOR: Degree of Industry Engagement**

<table>
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<tbody>
<tr>
<td>There is little or no tangible evidence of involvement by industry in any aspect of program.</td>
</tr>
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<table>
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<th>Minimal Engagement</th>
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<tr>
<td>Industry involvement is mainly characterized by attendance at meetings, with limited input on program.</td>
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<tr>
<td>Industry involvement has provided important contributions to certain aspects of program, such as advising on curriculum or offering facility tours.</td>
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<th>High Engagement</th>
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<tbody>
<tr>
<td>Industry has substantial involvement on multiple aspects of program, including direct involvement with students through workplace-based learning or mentoring.</td>
</tr>
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F = Fictional
Engage stakeholders in making decision rules

Creating rubrics, setting standards:

1. Research context
2. Facilitate dialogue among stakeholders
3. Draft together
4. Try out with fictional data
Summary

✔ Answer evaluation questions in the same terms in which they are asked.
✔ Make interpretive processes explicit and transparent.
✔ Engage stakeholders in interpretation.

Resources

Guide to developing and using rubrics in evaluation
Materials

Slides  Handout  Recording

www.evalu-ate.org/webinars/mar19

THANK YOU!
Please complete the feedback survey