

LOGIC MODELS AND EVIDENCE OF PROMISE FOR HEP/CAMP PROJECTS

February 17, 2016
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Office of Migrant Education Mission

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- To provide excellent leadership, technical assistance and financial support to improve the educational opportunities and academic success of migrant children, youth, agricultural workers, fishers and their families.

Overview of Presentation

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- Motivation
- Logic Models
- Evidence of Promise
- Conclusions

Motivation

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- Funding for education programs is limited
- Stakeholders seek positive impacts
- Project designs can be based on evidence
- Project evaluations can build evidence

Educational Department General Administrative Regulations (EDGAR)

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- Distinguish strong theory from evidence
- Strong theory means “a rationale for the proposed process, product, strategy, or practice that includes a logic model”

What is a Logic Model? (from EDGAR)

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- A logic model means a well-specified conceptual framework that
 - ▣ identifies key components of the proposed process, product, strategy, or practice
 - ▣ describes the relationships among the key components and outcomes

Selection Criteria:

Quality of Project Design

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- ▣ 2. Quality of Project Design:
 - v. The extent to which the proposed project is supported by strong theory (as defined in 34 CFR 77.1(c)).

Components of a Program Logic Model (from

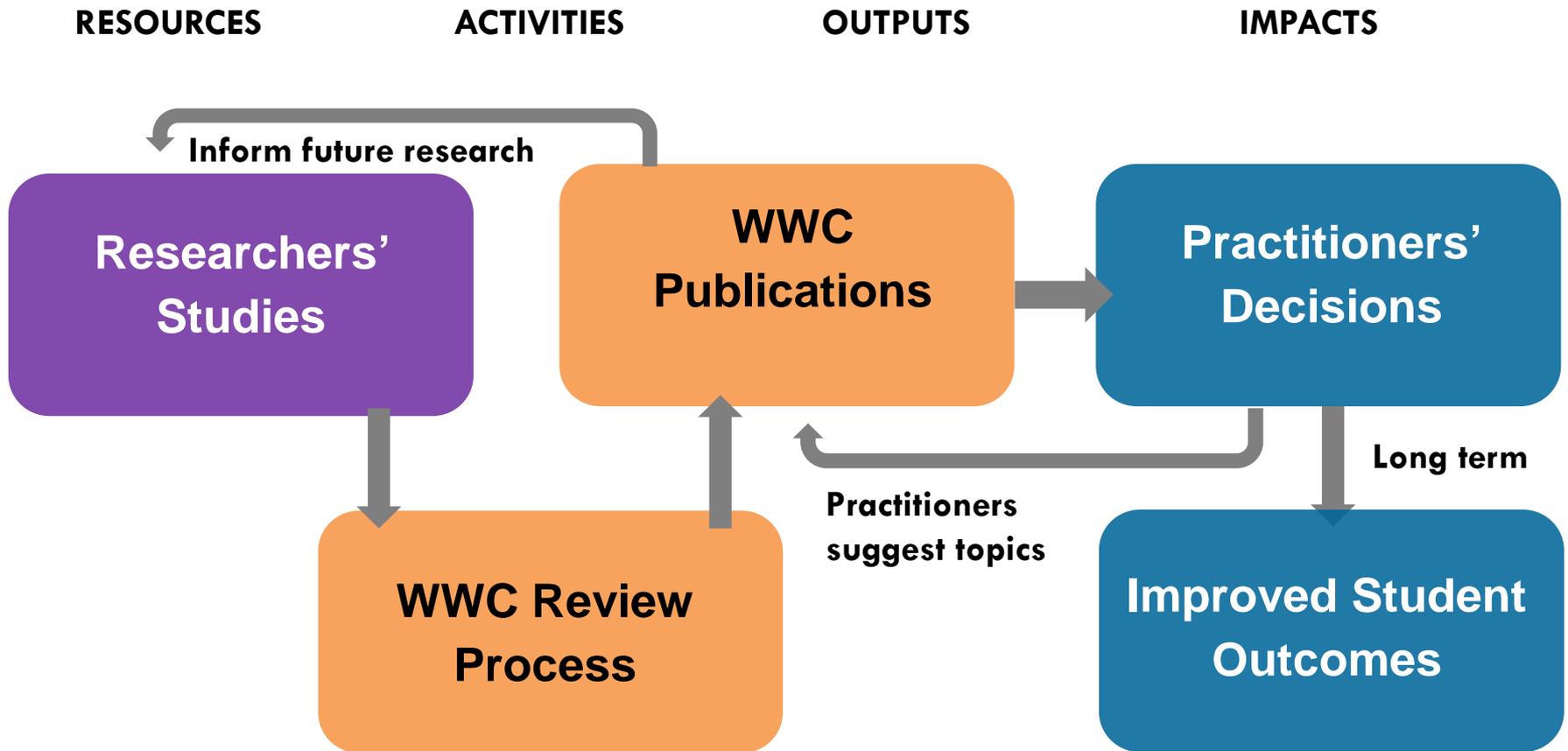
http://ies.ed.gov/ncee/edlabs/regions/pacific/pdf/REL_2014025.pdf)

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- Resources: materials to implement the program
- Activities: steps for program implementation
- Outputs: products of the program
- Impacts on Outcomes: changes in program participants' knowledge, beliefs, or behavior

Logic Model for the What Works Clearinghouse

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Evaluation Questions Implied by a Logic Model

(from http://ies.ed.gov/ncee/edlabs/regions/pacific/pdf/REL_20140007.pdf)

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1. Resources: *What resources were provided for the project?*
2. Activities: *Was the project implemented as intended?*
3. Outputs: *Were the expected outputs from the project realized?*
4. Impacts on Outcomes: *What impacts did the project have on key outcomes?*

QUESTION BREAK

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Next Topic:
Evidence of Promise

Selection Criteria:

Quality of the Project Evaluation

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- ▣ 7. Quality of the Project Evaluation :
 - iii. The extent to which the methods of evaluation will, if well-implemented, produce evidence of promise (as defined in 34 CFR 77.1(c)).

Evidence Levels

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- Evidence goes beyond theory by having an empirical basis that a project works
- EDGAR distinguishes three levels of evidence:
 - ▣ Evidence of Promise
 - ▣ Moderate Evidence of Effectiveness
 - ▣ Strong Evidence of Effectiveness

Evidence of Promise

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- Evidence of Promise is “empirical evidence” to support the theoretical linkage(s) between at least one critical component and at least one relevant outcome presented in the logic model for the proposed process, product, strategy, or practice.”

Evidence of Promise (continued)

- Must be one study that is either a—
 - ▣ Correlational study with statistical controls for selection bias;
 - ▣ Quasi-experimental design (QED) study that meets WWC Evidence Standards with reservations; or
 - ▣ Randomized controlled trial (RCT) that meets the WWC Evidence Standards with or without reservations.

Evidence of Promise (additional requirement)

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The study must have “found a statistically significant or substantively important* favorable association between at least one critical component and one relevant outcome presented in the logic model for the proposed process, product, strategy, or practice.”

* = a difference of 0.25 standard deviations or larger

“Correlational study with statistical controls”

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- A correlational study looks at the association between receipt of an intervention and an outcome of interest.
 - ▣ An intervention can be a process, product, strategy, practice, program, or policy
- Statistical controls for selection bias = how study authors attempt to compare subjects similar except for the receipt of the intervention.

What is selection bias?

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Selection bias is “an error in choosing the individuals or groups to take part in a study. Ideally, the subjects in a study should be very similar to one another.. If there are important differences, the results of the study may not be valid.”

(National Cancer Institute)

Selection Bias: An Example

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- Study the impact of a new sports stadium on the local economy
- Compare economies of cities with new stadiums and cities with old stadiums
- Problem: Cities with new stadiums are not equivalent to cities with old stadiums

Randomization as a Control for Selection Bias

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- A randomized controlled trial is “a study that employs random assignment of [subjects] to receive the intervention being evaluated (the treatment group) or not to receive the intervention (the control group).”
- “The estimated effectiveness of the intervention is the difference between the average outcomes for the treatment group and for the control group.”

How RCTs Can Avoid Selection Bias

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- Random samples will tend to resemble the populations from which they are drawn
- In RCTs, treatment-control differences will be due either to chance or to the treatment contrast between groups (unless there is bias from attrition)
- Statistically significant treatment-control differences indicate effects of the intervention

Why Use Quasi-Experimental Designs?

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- An experimental design may not be feasible:
 - ▣ Random assignment may be impossible or may be opposed for legal, ethical, or political reasons
 - ▣ Even if random assignment is allowed, resources may be sufficient to provide the intervention to everyone

- Quasi-Experimental Designs are intended “to approximate an experimental design by identifying a comparison group that is similar to the treatment group in important respects.”

Statistical Controls in QEDs

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- Matched comparison group designs select a comparison group that is similar to the treatment group, and often use additional statistical methods to establish equivalence in baseline characteristics of the two groups
- Regression discontinuity designs assign the treatment using a measure of need or merit, allowing estimates of the effects of the intervention on the margin of eligibility

Studies that Can Provide Evidence of Promise

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Meets WWC Group Design Standards Without Reservations	Meets WWC Group Design Standards With Reservations	Does Not Meet WWC Group Design Standards
Low-attrition RCT		
	High-Attrition RCT that establishes baseline equivalence	
		High-attrition RCT that does not establish baseline equivalence
	QED that establishes baseline equivalence	
		QED that does not establish baseline equivalence

Summary: A Study Providing Evidence of Promise...

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- Investigates the effect of the intervention (at least one key component of a project) on a relevant outcome
- Uses a treatment group and a comparison group to associate differences in outcomes with the intervention
- Include statistical controls for selection bias
- Shows a statistically significant or substantively important effect on a key outcome

QUESTION BREAK

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*Next Topic:
Conclusions*

Conclusions

- A program or intervention needs a logic model to (1) justify its design and (2) inform its evaluation
- Evidence of Promise requires a study of the effects of the intervention on relevant outcomes that either
 - ▣ meets What Works Clearinghouse standards, or
 - ▣ is a qualifying correlational study

Remember:

Specific Selection Criteria

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- 2. Quality of Project Design:
 - v. The extent to which the proposed project is supported by strong theory (as defined in 34 CFR 77.1(c)).

- 7. Quality of the Project Evaluation :
 - iii. The extent to which the methods of evaluation will, if well-implemented, produce evidence of promise (as defined in 34 CFR 77.1(c)).

Additional Resources

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- What Works Clearinghouse *Handbook*
<http://ies.ed.gov/ncee/wwc/DocumentSum.aspx?sid=19>
- Webinars on Designing Strong Studies and QEDs
<http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=18>
<http://ies.ed.gov/ncee/wwc/Multimedia.aspx?sid=23>
- Additional Resources on the Design of QEDs
<http://www.dir-online.com/wp-content/uploads/2015/11/Designing-and-Conducting-Strong-Quasi-Experiments-in-Education-Version-2.pdf>

Contact Information

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