Poster Title:

Research on Evaluation: A Trial of the Systems Evaluation Protocol (SEP) for Evaluation Planning for STEM Education.

Session Abstract (150 words):

This poster summarizes the overall process and present findings of a 5-year research project that included the development and testing of the Systems Evaluation Protocol (SEP) for developing evaluation plans. This research was a Phase II correlational study designed to assess the efficacy of the SEP and its accompanying Netway cyberinfrastructure in building evaluation capacity and developing high-quality evaluation plans. The use of the SEP builds evaluation capacity at all levels of a system, encourages integration of program evaluation into program management, and promotes the integration of research and practice. Research questions included looking at program models and evaluation plan quality, evaluation capacity, and attitudes toward evaluation. Most program staff who used the SEP to plan their evaluation requested additional training and support to implement their plans and to analyze and use their findings. Consequently, the project extended the SEP to address evaluation implementation and utilization.

Relevance :

Major contemporary challenges in STEM education evaluation include: encouraging and supporting high-quality evaluation work, especially in educational organizations that lack evaluation capacity and expertise; sustaining capacity for evaluation; and building the evidence bridges for true research-practice integration. Methodologies derived from the basis of the SEP can build evaluation capacity at all levels of a system by teaching evaluation, encouraging integration of program evaluation into program management, and promoting the translation and integration of research-based evidence into programs, and practice-based evidence back to research. Because it is grounded in research, the SEP yields evaluation plans that meet current best practices as defined by the American Evaluation Association. The SEP steps, the teaching methodologies and the accompanying resources also incorporate cutting-edge technologies and systems theories to address systems barriers to sustainable high-quality evaluation. As program funders work to stretch their funding dollars they are recognizing that funding external evaluations can be prohibitive to budgets, therefore building evaluation capacity and evaluative thinking within program staff can be an essential element of a strong evaluation plan. In this unique study we examine the quality of evaluation plans of program staff, regardless of whether they intend to conduct their own internal evaluation, or if they use their plans to jump-start discussions with external evaluator. The SEP is a tool that can benefit many newcomers to the "big tent" of evaluation.

A Trial of the Systems Evaluation Protocol (SEP) for Evaluation Planning for STEM Education

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An approach to program evaluation that incorporates:

- Program modeling and causal pathways
- Stakeholder mapping
- Local and global contexts
- Links to published research
- Program evolution
- Practitioner knowledge
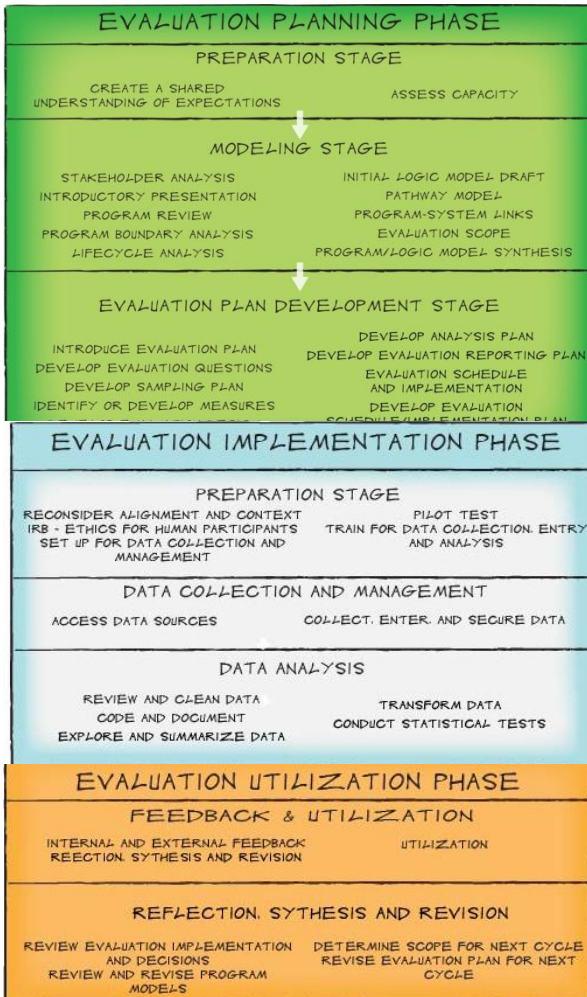
The Protocol:

The steps of the Protocol provide a framework for building a high quality evaluation plan and supporting its implementation and utilization. In practice, and consistent with a systems perspective, the steps do not need to be followed exactly in the order presented at left, but can be conducted in a different order if that suits the needs of the organization and stakeholders involved. Steps should be revisited throughout the planning process.

For purposes of this trial, the Protocol was used as part of an Evaluation Capacity Building effort with Cornell Cooperative Extension (CCE) in New York State, and with Materials Research, Science and Engineering Centers (MRSECs), nationally.

Previous to this study, the Protocol and materials were developed (in working with 46 educational outreach programs) through support from NSF (Grant # 0535492), and Cornell Cooperative Extension. The Protocol and materials were further developed through the current project.

Trochim, W., Urban, J. B., Hargraves, M., Hebbard, C., Buckley, J., Archibald, T., Johnson, M., and Burgermaster, M. (2012). *The Guide to the Systems Evaluation Protocol* (V2.2). Ithaca, NY.

Conclusions

- Active engagement with the process changes the way people think – about their programs, about evaluation, about the value of data
- Doing the program modeling alone yields significant "Aha's!" about programs
- Those who really "get it" strengthen their subsequent program development and evaluation work on many programs beyond their EP program, and share tools and insights with others
- Preliminary analysis of completion of evaluation implementation reflects that everyone faces barriers to conducting evaluation, but the reported magnitude of barriers doesn't seem to be predictive of who will or will not complete evaluation.
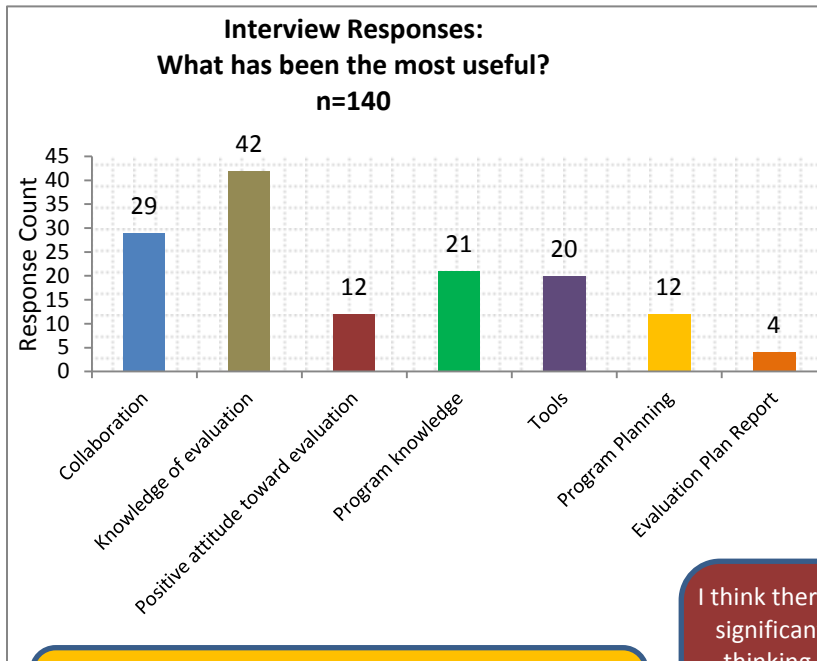
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Poster Presentation 10/15/14 at AEA Evaluation 2014, Denver, CO

What has been the most useful?

Interview Responses:
What has been the most useful?
n=140

Response Count

45
40
35
30
25
20
15
10
5
0

29 · 42 · 12 · 21 · 20 · 12 · 4

Collaboration · Knowledge of evaluation · Positive attitude toward evaluation · Program knowledge · Tools · Program Planning · Evaluation Plan Report

For the staff it's been the creation of the logic and pathway models that enable them to think about what they do and why they do it.

Knowledge gained, an awareness of the importance of quality evaluations, and the general positive impact and awareness the evaluation process

…learning to better serve the people taking our educational programs, and then hearing about how other counties do things, and what does and what doesn't work for them…

I think there has been a significant change in thinking and in our institutional culture about the value of evaluation.

The manual, tools, and access to the Netway- something that is concrete and can be used after we complete the process

Thinking with the end in mind, outcome based planning, considering the logic behind our work when performing activities towards the end outcome.

Getting so much program planning done and learning so much about evaluation (though I have a lot left to learn still). .

Thinking more carefully about why we are doing what we are doing and what our true intentions are.

One person was able to use it for their grant proposal. Others have used the pathways model in internal meetings as a quick way to communicate to their colleagues..

Having time with our colleagues to look at programs and their hoped-for outcomes or impacts.

I think some of them value evaluation more than they did before. They also understand why this whole process is important now.

Learning one process that we can follow to create evaluation. learning about resources, both for the present and the future

The evaluation tools we created during the project we can use multiple times.

Publications:

Urban, J. B., & Trochim, W. (2009). The Role of Evaluation in Research-Practice Integration: Working Toward the "Golden Spike". *American Journal of Evaluation*, *30*(4), 538-553.

Urban, J. B., Hargraves, M. and Trochim, W. M. (2014). "Evolutionary Evaluation: Implications for evaluators, researchers, practitioners, funders and the evidence-based program mandate." *Evaluation and Program Planning, 45*, 127-139.

Urban, J. B., Burgermaster, M., Archibald, T., Byrne, A. (In Press.) Relationships Between Quantitative Measures of Evaluation Plan and Program Model Quality and a Qualitative Measure of Participant Perceptions of an Evaluation Capacity Building Approach . *Journal of Mixed Methods Research*

Buckley, J., Archibald, T., Hargraves, M., Trochim, W., (TBD) Defining and Teaching Evaluative Thinking: Insights from Research on Critical Thinking. (planned for AJE late 2014)