Session Title:
Collaborative Logic Modeling: A Tool for Developing a Shared Vision Across Diverse Partner Perspectives

MSP Project Names:
- Mathematical ACES
- SF Bay Integrated Middle School Science Project
- Minority Student Pipeline MSP

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Collaborative Session

Strand 1

Summary:
NSF requires articulating theories of change and/or logic models (LM) for MSP proposal submission. Situated in three MSP targeted partnership programs, a panel of PI’s, project directors, district leaders, and evaluators will share their journeys using LMs formatively for continuous improvement. This panel used a collaborative LM development (CLM) process for management, research, evaluation and professional development initiatives along with examples. Findings address the benefits and challenges of using CLM to: 1) help build consensus and foster collaboration across complex layers of networked partners, 2) strengthen program management, implementation, research and evaluation designs, and 3) identify and articulate negotiated theories of change. Panel members will help participants apply templates to explore how CLM can be adapted for their projects.

Section 1: Questions framing the session:
To effect change via MSP grants, complex STEM knowledge networks of partners must manipulate multiple strands (economic, political, STEM, educational and social), which operate at many levels (community, institutional, network, family, and individual), are co-constructed in a collaborative process by diverse stakeholders, and evolve over the course of the initiative. Each of these factors can plague management, research and evaluation (R&E) of more circumscribed programs, but in MSPs these factors are
defining traits. They are the rule, not the exception. Evaluators and grant-making organizations have found that one powerful way to improve the chances that a set of activities or program of action will succeed is to help the organizers specify the reasoning that serves as their **theory of change** (Connell & Kubisch 1998; Sullivan & Stewart 2006; Weiss 1995). This includes how it seeks agreement from all stakeholders. While these theories can be captured in **logic models** (and in fact are now a MSP mandate for proposal submission), it is unclear in the literature if and how the logic modeling process continues beyond the initial stages of a grant to reflect and catalyze its evolution over the course of each initiative.

Weiss (1995) defines a theory of change quite simply as a theory of how and why an initiative works. A theory of change specifies, up front, how activities will lead to interim and long outcomes and identifies the contextual conditions that may affect them. To develop plausible, doable, and testable theories of change, MSPs need to draw upon various sources of information—program experience, scientifically generated knowledge, and community partner insights. It is not uncommon for MSP projects to be launched without the various theories of change being clearly articulated, much less understood or reconciled across diverse partners. Resolving the challenges that these multiple theories pose is a political as well as scientific, social and educational process. And as the project evolves, data from research and evaluation can contribute to coherence as well. We want to study this process in the hope that a MSP theory of change can be articulated and provide important information about measuring activities and interpreting outcomes and supporting genuine scale. Sanders’ (2012) work suggests that three factors--intent, knowledge and skills, and access--were found to affect the relationships forged by leaders. Her study's findings highlight the need for more targeted studies on relationship development and maintenance at different stages of reform implementation.

In this proposal, we would like to present how three MSP Targeted grants have used a collaborative approach to logic modeling to articulate various perspectives and **negotiate a common vision** – in essence, our **theories of change**. We have been using collaborative logic modeling (CLM) as both an ongoing process and a product to ‘map’ the relationship between a program’s resources, activities, and intended results as well as identifying the program’s underlying theory and assumptions (McLaughlin & Jordan 1999; Renger & Titcomb 2002). Besides project specific theories of change, it is important to understand its resonance with the funding agency’s theory of change. MSP has undergone changes in its theory of action for this current competition as well as “honed” its theory of action from earlier competitions. An analysis of the 2002 NSF MSP solicitation by theory of change (Connally & Seymour) makes clear NSF’s **programmatic means** (school-university partnerships) for pursuing its **desired ends** (wide-scale improvement of student achievement), but offers no explanation for **why** this approach will attain these desired improvements.

Following a review of theory of change and LM literature, the panel will address four thematic questions:
1. How helpful is collaborative logic modeling (CLM) to: a) surface theories of change in MSP partnership grants; b) clear understanding of core assumptions and success indicators?

2. To what extent can a common vision or theory of change be negotiated/co-constructed across the diversity of MSP partners and how does logic modeling facilitate this?

3. Does a theory of change and a project’s core assumptions shift at different stages of the three MSP targeted partnerships (e.g., facilitating factors and challenges and partner relationships, commitments needed to proceed, how good is good enough, success indicators, and framework to understand scaling)?

4. How well do the three program’s theories of change align with NSF MSP’s theory of change?

Section 2: Conceptual framework:
We have selected Life Cycle of Implementation’s #1a developing a shared vision as our primary strand. Related strand elements include: (2) Different perspectives represented by a panel of diverse stakeholders from three targeted MSP partnerships: PI, project director, higher education faculty, teacher leader, district administrator, researcher and evaluator) and (3c) how the vision changed as a result of research and evaluation findings. While we have been conducting a longitudinal mixed methods case study with research results being presented at AERA this spring, this proposal will focus on the using logic modeling to reveal MSP program of change and its effectiveness in articulating a common vision. While the projects are similar (all Targeted MSPs), they differ in terms of geography, content, and institutional capacity for development and research.

Neither social science research nor experience-to-date nor participants' insights alone offer a complete picture of the processes of change that MSPs are seeking. We are using Connell and Kubisch’s theory of change approach (1995) and Sanders work (2008, 2012) to surface and articulate a theory of change and document this articulation process via our longitudinal and collaborative approach to logic modeling. The three cases provide a meta-analysis of the advantages and limitations of logic modeling to support the articulation of program theories of change and negotiation of a common project vision across diverse partners. Three NSF partnerships designed to narrow the STEM achievement gap were selected to study the viability of a collaborative logic model (CLM) approach for developing, managing, and assessing the performance outcomes of networked educational collaborations. In the final section, the paper discusses the implications of the CLM approach for researchers, evaluators and practitioners involved in developing, managing, and assessing the performance outcomes of collaborative and networked initiatives.

Theory base: Network performance is especially problematic to study compared to non-network situations because networks are often characterized by indeterminate organizational boundaries; shifting or still developing, and variously defined or misunderstood structural relationships among participants; iterative and recursive inter-organizational processes; and organizations serving divergent stakeholders and agendas.
Networks also present an empirical challenge related to data constraints associated with available cross-agency data, long-term time horizons required to assess collaborative initiatives, and accounting for the multiple interacting variables influencing collaborative outcomes (Koontz & Thomas 2006). Consequently, traditional approaches used to measure the performance of a single organization or program are insufficient for assessing the performance of networks such as NSF partnerships. This poses a particular problem for externally funded educational partnerships whose managers, researchers, and evaluators are often held accountable for measurable performance outcomes—even when services such as professional development (PD) are delivered through networked arrangements over which project managers do not have authority. These situations highlight the managerial challenges of being expected to coordinate network collaboration while at the same time being held responsible for accomplishing network objectives. When teachers receive services such as coaching and lesson study embedded in communities of practice that are not delivered in a linear way but rather in iterative feedback loops, the web of impacts becomes especially difficult to document. Consequently, traditional educational research and program evaluation methods may not adequately reflect a network’s effectiveness.

Researchers and practitioners have developed logic models for a variety of organizations and programs as a means to conceptually map and measure the relationships between operational processes and their expected outcomes (Kaplan & Garrett 2005; Kellogg Foundation 2004; Penna & Phillips 2004). Many logic models are developed in the context of helping develop and make explicit the success indicators associated with expected performance of learning organizations. According to Hatry (2006), developing a logic model involves identifying key elements and indicators in four areas: 1) inputs (e.g., resources, investments); 2) activities (e.g., services, processes, strategies, methods); 3) outputs (e.g., tangible products delivered by a program; and 4) outcomes (e.g., expected changes in the short-term, mid-term, and long-term). Although most applications of logic models tend to focus on developing a linear service delivery map of a single program, a logic model has the potential to be adapted to reflect an open system and therefore to map the outcomes sequencing of complex initiatives (Nesman et. al. 2007; Julian 1997). This open system capacity is critical to NSF MSP operations.

Having a role for both qualitative and quantitative data in a logic model makes it especially relevant in a network context because of the current underdeveloped methodological state of network measurement techniques. Consequently, a logic model approach enables researchers, evaluators and practitioners to collaboratively explore the development of network performance indicators. Elaborating such hypotheses as an overall logic is especially relevant in multi-organizational networked settings where it is impractical to identify exact causal relationships or directions within multiplex structures. Weiss (1995) suggests that one way to evaluate complex multi-party community collaborations is to compare the initiative’s “theory of change” with its end results.

**Contexts:** Our instrumental case study is situated in three MSP initiatives funded over different periods, with one having completed one five year cycle and commencing a
second cycle and two in their third year of funding. The projects were selected because they share the common goal of networking university, district, and informal STEM agency partners to collaboratively deliver intensive, inquiry-based professional development in order to increase math and science achievement in high needs schools. Major vehicles for delivery involve *communities of practices* (CoPs), lesson study and distributed leadership. The majority of the partner school districts currently receive federal funding based on at least 40 percent of families meeting income criteria to receive free or reduced lunch. The presenters represent a range of project roles: PI, project director, evaluator, researcher, higher education faculty, teacher leader, and district administrator. Having prior experience working with all the projects, the external evaluator “networked” to resources across the projects. The presenters have formed their own CoP, engaged in some “mixed-methods-like” activities such as equal-status negotiation, data sharing, and partner-ideas synthesis.

**Methods, Modes of Inquiry:** We are taking an *ecological approach* (McLain & Tucker 2011) to our work because the project schools are embedded in communities, districts, administrative structures and interact with other systems including the universities providing training, local neighborhoods, a state system, and multiple cultures. The research design is cross-sectional, and is designed to generate descriptive evidence through grounded case study. Data collection instruments were structured around gathering information about use of logic models, the benefits and challenges of using logic models, contributions of CLM to theory of change articulation and negotiation, and the degree logic models shifted in each project over the life of each of the three project cases. Extensive and multiple kinds of QUAL and QUAN data have been collected across the three projects. Future project years will continue this data-collection process, allowing use of an interrupted time-series “logic” (modeling change over time, and using initial data points and retrospective interview question results as counterfactual benchmarks). We are collecting both objective (numerical) and subjective (e.g., depth-interview) data.

**Section 3: Explanatory framework:**
While there is insufficient space to delineate our findings in this proposal, we will be sharing lessons learned regarding CLM development and utility to articulating and negotiating project visions/theories of change with diverse stakeholders. In sum, CLM helps network members to more sharply develop and describe the story of how their interactions relate to one another and to collectively shared outcomes. Some results include:

- CLM provides a way to more fully account for a wider range of network processes and connections of complex projects that would otherwise be overlooked or underspecified by output-based performance measurement approaches.

- Development of logic models also served to clarify expectations and identify differences between the funder’s priorities or perceptions of the program and those of various partners the community, some who were deeply involved since the beginning of the proposal, others more tangential having come on board since project onset or were simply not as engaged for a variety of reasons.
The combination of an ecological network metaphor (emphasizing interrelated systems in a dynamic/organic environment) and grounded theory/logic-modeling approaches have been helpful in conceptualizing the “big picture” of each program.

Seven core assumptions of networked partnership were identified, probed and success indicators developed: (1) Continuous collective improvement; (2) Culturally responsive practice; (3) Building capacity for Community of Practice; (4) Networked Learning; (5) Distributed Leadership; (6) Authentic Partnership; (7) Data enhanced systemic instructional change

Core research questions were mapped and aligned to evaluation questions and to the project’s overall LM.

The process of LM may be more important in the short term given shifts during the early years of a project and unexamined assumptions early on but the refined LM product may be more useful to external audiences when building sustainability and scaling.

By the second year of a grant, more established collaborative structures enable increasingly focused & ?? methods for evaluation, research and program across partners and thereby a more consistent common vision emerging after the second year.

Regarding mixed methodology, a single purpose for inquiry did not apply for our needs. Using the Greene (2007) criteria, our purposes for mixing include complementarity and triangulation, as well as development, informing constituencies and building stakeholder networking capacity.

The CLM concept is potentially broad and flexible enough to reflect the variety of the inter-organizational relational processes of networks that may be associated with outcomes in shifting networked contexts.

### Section 4: Discussion

Emerging practical learnings and research will be discussed. The session presenters have documented shifts in project partners from procedural understanding to conceptual understanding when key stakeholders meet regularly to reflect on progress and outcomes of their work. CLM during the grant writing as well as annual reviews of a grant’s progress support inquiry into the various project components. The process and the product of a collaborative negotiated theory of change can serve multiple purposes—as tools for project management, evaluation, and reflection for partner groups and for the project as a whole. This CLM process helped to reveal and negotiate core assumptions, generate commonly understood research and evaluation questions, network across diverse groups, share learning’s about effective teaching, increase coherence across all partners, build capacities for inquiry-based teaching and learning, examine distribution of leadership and build towards systemic instructional change in all partner organizations.

### Section 5: How will you structure this session? What is your plan for participant interaction?

We are using a panel structure that proved effective with a November 2012 demonstration session at American Evaluation Association. The session is organized in five phases: 1) demonstrating a CLM process to refine project goals, activities and outcomes across iterations of development, research, and evaluation; 2) sharing a
research-based ecological framework to articulate core questions and assumptions of project partners; 3) modeling a probing protocol to build trust and facilitate diversity yet negotiate core assumptions, theories of action and instruction, operational definitions, and indicators of short and long term progress; 4) reflecting on how CLM can focus, guide and structure collaboration that contributes to fidelity to original proposal, provides a framework for negotiating inevitable ongoing change and support partner capacity building where needed; 5) engaging participants by dividing into small groups to reflect on participants’ existing logic models with panel members serving as group facilitators to explore how CLM can be adapted for their own projects.

Selected References:


