1. Questions(s) or issue(s) for dialogue at Learning Network Conference session:

In 2004, the University System of Maryland (USM) received a supplemental grant from NSF to study a broad range of issues related to institutional change, and to examine the effect of MSP projects on changes in higher education that strengthen STEM faculty involvement in undergraduate teaching and K-12 educational reform. This study, *Change and Sustainability in Higher Education* (CASHÉ), built upon the work of USM’s targeted MSP project, *Vertically Integrated Partnerships K-16* (VIP K-16), involving multiple colleges and universities in Maryland that were focused on increasing the engagement of STEM faculty in teacher preparation, K-12 partnerships, and inquiry-based teaching and learning in undergraduate science courses. In particular, VIP K-16 raised a number of questions about the constraints and facilitators that affect faculty and institutional engagement in MSP work. Thus, through CASHÉ, USM proposed to study some of the questions and issues raised by its local MSP work to the national level, in order to more fully and formally explore how to institutionalize a P-20 perspective in higher education.

2. Context of the work within the STEM education literature and within your MSP project:

One of the premises of the CASHÉ research is that organizational culture and the context for change in higher education play a significant role in shaping the extent to which faculty leadership in such areas as STEM educational partnerships is valued and rewarded. Kezar and Eckel’s (2002) study suggested that change processes in higher education are largely shaped by institutional culture. They found that while there are various general tactics or strategies that work to create change in organizations, change strategies in higher education seem to be most successful when they are contextualized for the specific institution. In examining 26 colleges and universities that were involved in varying types of institution-wide change initiatives, they found that institutional leaders are more successful when they choose strategies and tactics that are relevant and a fit with the culture. They observed that change strategies that consider institutional mission, history, and values are better positioned to facilitate change because they are more likely to resonate with members of the campus community and be met with less resistance.

At the same time, neither top down administrative leadership nor faculty grassroots leadership may yield sustainable change or result in the widespread adoption of new ideas or methods unless a cultural shift takes place in tandem with such developments. Gaining support for culture change is a complex process. As classic writers in the field of change management such as Lewin (1951) and Schein (1997) have noted, the culture of the organization must change or shift...
in such a manner that the desired state replaces the existing state. In applying these perspectives on change management to higher education, Ewell (1997) described institutional change as requiring constant and consistent leadership, a fundamental shift in perspective, individuals and organizations to relearn their roles, and systematic ways to measure progress and guide improvements.

Further, Burack and Saltmarsh (2007) posited that in order for institutional changes to turn into institutionalized practices, they must become routine, widespread, legitimized, expected, supported, permanent, and resilient, as opposed to those that are marginalized, occasional, isolated, unaccepted, uncertain, weak, temporary, or at-risk. Likewise, Levine (1980), in examining the innovation process at 14 colleges and universities, stressed that innovation efforts in higher education do not tend to become institutionalized unless such changes are congruent with underlying shifts in culture and therefore consistent with institutional values, norms, and goals.

3. Claim(s) or hypothesis(es) examined in the work (anticipating that veteran projects will have claims, newer projects will have hypotheses):

From the outset, one of the overarching goals of the CASHÉ project was to “catch colleges and universities when they were doing something right,” and to identify both intermediate and conclusive indicators that suggest or demonstrate how colleges and universities can successfully engage in change activities that strengthen their support of K-12 mathematics and science education and teacher preparation. Thus, some of the global questions that guided this work were the following:

- How do we identify key indicators of institutional change across different types of institutions, and what documentation can we provide to demonstrate the presence of these factors and evaluate these factors in a given context?
- What tools and instruments already exist to evaluate and recognize institutional change in higher education? In what ways are the tools and instruments being used? What new tools or instruments should be developed?
- Where do we see examples of sustainable P-20 partnerships and cultures of organizational support, and what can we learn from them? Where are there good examples from other kinds of organizations that might offer some insight into change in P-20 education?
- What can we learn about the contexts that make sustainable and intentional change possible in higher education? Where do gaps exist across different contexts and higher education cultures?
- What changes that have been supported by MSPs have made a difference in creating institutional conditions and capacity in higher education to support the reform of science
and mathematics education and the meaningful engagement of faculty in this enterprise? How can we evaluate these changes?

- How can institutions of higher education provide incentives and rewards to stimulate and motivate faculty so that creative teaching and pedagogical scholarship becomes part of faculty culture?

4. Evaluation and/or research design, data collection and analysis:

The data informing this study included a broad range of quantitative and qualitative sources that in some cases were collected by the researchers, in some cases by external evaluators, and in other cases by MSP project participants themselves (i.e., faculty and administrators). Data sources included site visitor reports, interview notes and transcripts, and various project artifacts (e.g., annual reports, project-related publications). The researchers also conducted site visits with six MSP projects (comprehensive, targeted, and institute) at various types of institutions and at various stages of progression and implementation. Drawing upon the research literature on leadership and organizational change in higher education, these visits explored the extent to which factors and influences such as institutional mission and context, leadership priorities, faculty culture, administrative support, and recognition and reward structures appeared to have an impact on MSP work. The researchers conducted a series of within-case analyses that examined unique patterns within each of the six MSP project sites that were visited, as well as an overarching cross-case analysis that examined common themes as well as points of departure across the six MSP project sites. Drawing upon case study methodologies outlined by Yin (2002), the researchers formed descriptive categories for the data and tracked emerging themes across various data sources. The findings were presented to the CASHÉ project’s external Advisory Board, who discussed and developed a series of recommendations, implications, and next steps based on the research findings.

5. Key insights (retrospective for veteran projects, prospective for newer projects) that have value for the Learning Network:

In this research, seven key theme areas emerged that were seen as having a substantial impact on shaping the environment for institutional change on MSP campuses: (1) institutional culture/context; (2) role of MSP project leaders; (3) impact of institutional leadership/support; (4) investment/motivation of participating faculty; (5) structural changes that supported and/or resulted from MSP work; (6) course/curricular changes that supported and/or resulted from MSP work; and (7) plans for sustainability. In this session, findings and observations from each of these theme areas will be discussed and a range of examples will be provided. A series of recommendations coming out of the study will also be shared, including implications at the national policy level, as well as implications for institutional leaders who support this work on their campuses, and disciplinary faculty members who lead and engage in this work.
References


