

Session Number: 23

Abstract Name: **Engaging MSP Participants through K-16 Learning Communities: Implementation and Research**

MSP Project: PPRISM Phase II: Research on Key PRISM Strategies

Author(s): Charles Martin, Sabrina Hessinger, Stacy Schwartz, Dava Coleman,
And Vann Scott

Presenter(s): Charles Martin, Sabrina Hessinger, and Vann Scott

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

- What are the common characteristics/attributes of successful K-16 Learning Communities (LCs) and how do these differ from successful K-12 LCs?
- What are the various roles of IHE participants in K-16 Learning Communities (LCs)?
- What were obstacles faced by successful learning communities and how did they address those obstacles?
- How are MSPs examining the connections between learning community participation and impact on teaching and learning?
- How are educators changed by their participation in K-16 LCs?

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

Professional Learning Communities

Learning communities have long been established as an effective approach for enhancing learning in a variety of populations. Freshman learning communities have proved to enhance the retention rate of college students (Hotchkiss et al., 2006). In institutes of higher education, faculty members have formed communities of practice (Wenger et al., 2002) or faculty learning communities (Cox and Richlin, 2004) around common issues, such as improving instruction or research concerns. The last decade has seen the rise of the teacher professional learning community as a means of tackling fundamental issues of teaching and learning (DuFour and Eaker, 1998).

In professional learning communities, as defined by Dufour and Eaker, all members are moving toward the same goal. Senge et al. (Senge, 2000) define professional learning communities as “spaces” where people from different perspectives learn more powerfully in concert with others who are struggling with the same issues. To achieve its goal the community members collaborate to seek out best practices, implement and test best practices, and continually assess their impact. In other words, a Professional Learning Community is a place “in which the professionals (administrators and teachers) continuously seek and share learning to increase their effectiveness for students, and act on what they learn.” (Hord, 1997),

PRISM Phase I: Implementation of K-16 Professional Learning Communities

In Georgia, through the Partnership for Reform In Science and Mathematics (PRISM), professional learning communities have embraced these three perspectives while seeking to increase the impact of professional learning communities on student achievement in science and mathematics by involving participation of higher education faculty. PRISM professional learning communities bring K-12 teachers and higher education faculty together to share expertise and experience as they develop, validate, and replicate effective practices in science and mathematics teaching.

Several viable and successful yet distinct implementation models have been created under the umbrella of the PRISM K-16 Learning Community definition. These range from school-based professional learning communities to statewide communities of practice. Throughout the implementation of PRISM Phase I, several characteristics were observed to be common to most PRISM LCs, regardless of the model type, be it school based, district based, grade level focused or vertically aligned. These characteristics included support of an overarching partnership such as PRISM, facilitative and shared leadership, shared practice, a focus on teaching and learning, and use of evidence to both give direction to the learning community and assess its effectiveness. These characteristics are reflective of the attributes of K-12 LCs as reported in the literature. Yet, the differences in roles of IHE faculty in learning communities varied widely among PRISM K-16 LCs and the following questions persisted: What are the attributes of successful K-16 LCs, how do these attributes interplay with the role of higher education faculty in the LC? and, how do each of these things correlate to the impact of the PLC on teaching and learning, and on professional practices?

PRISM Phase II: Research on K-16 Professional Learning Communities

Some of these questions about K-16 learning communities were partially answered through the PRISM Phase I evaluation. Indeed, reports from participants, PRISM leaders, and the PRISM evaluation team indicated that being a member of a K-16 learning community had a variety of positive effects, including changes in teaching practices, development of new partnerships, enhanced content understanding, greater appreciation for the work of K-12 teachers, and, in some cases, improvement in student learning. The purpose of our Research on Learning Communities in PRISM Phase II is to 1) firmly identify the attributes of successful K-16 learning communities and develop an instrument package to effectively measure them, and 2) to systematically examine the relationships between these attributes and three specific K-12 outcomes: a) classroom teaching practices; b) student learning; and c) teacher professional behavior.

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

Claim 1: In K-16 professional learning communities, the following attributes are strongly related to learning community success:

1. A *supportive environment* including both supportive institutional culture which has a history of and promotes collaboration between K-12 and higher education faculty and

conditions which are conducive to K-12 and higher education faculty collaboration.

2. Positive *group interactions*, which both build community among K-12 and higher education members as well as foster social and interpersonal relationships.
3. Learning community *leadership* which is goal and task oriented and which has exceptional skill at facilitative role development and engagement of all participants.
4. A *process for engaging in the work* which includes: seeking and sharing expertise, a shared and well defined focus, using data in planning and or assessment, and reflection on the impact on teaching and learning.

Claim 2: While there are similarities between attributes of K-12 and K-16 learning communities, successful K-16 communities place an increased emphasis on content, relationship building, attainment of equitable roles, and changed professional practices.

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

Research Design and Methodology

The PRISM Phase II learning community research is divided into two studies corresponding to two questions: 1) What are the attributes of successful K-16 learning communities and how they can be measured, and 2) What is the relationship between attributes of successful K-16 learning communities and a) student performance, b) teacher classroom practices, and c) professional practices?

Study 1: Attributes of Successful K-16 Learning Communities. Sub-question 1 focuses on identifying attributes of successful K-16 learning communities and designing an instrument package to measure those attributes. It includes 4 tasks: 1) sampling- identification of successful PRISM learning communities; 2) data collection- learning community interviews; 3) data analysis- identification of attributes; and 4) design of an instrument package to measure attributes.

Sampling: Identify Successful PRISM LCs. For the purpose of this study, successful PRISM LCs are defined by the following four criteria:

1. **Sustainability:** LCs must have been active for a minimum of 2 years, but could include LCs that are not currently active.
2. **Partnerships:** LCs must demonstrate collaboration between K-12 and university faculty members (e.g., LC co-lead, university faculty member a regular resource).
3. **Practices:** LCs must have evidence of changed K-12 teacher practices (e.g., new approaches to address difficult content).
4. **Learning:** LCs must have evidence of improved K-12 student learning (e.g., state level test scores, improved AP exam pass rates).

A Learning Community Screening Form was developed and was then used by three sets of PRISM Phase I participants to identify the successful LCs. First, PRISM Phase I Regional K-12 Coordinators from the Northeast, East Central, and Southeast regions compiled a list of LCs they

thought met the criteria of a successful learning community. Second, this list was reviewed and refined by the PRISM Phase I regional PI's. Finally, the list was reviewed and refined by the PRISM Phase I state-level regional evaluators from each PRISM Phase I region. The Research Question 1 Team then compiled a list of 26 LCs that met the criteria for success as defined above. The LC facilitator from each of these 26 successful LCs was identified and invited to participate in the study.

Data Collection: Learning Community Interviews. To identify learning community attributes the team created a Learning Community Attribute Interview Protocol. The protocol is based on attributes identified in the broad learning community literature. Three team members have conducted individual interviews with the learning community facilitators in the sample.

Data Analysis. Team members analyzed results from the interviews using qualitative organizing and reporting methods, primarily using an analytical framework approach examining processes, issues, questions, and sensitizing concepts (e.g., shared leadership versus a single leader). For additional information see Patton (2002). The resulting attribute list will be validated by LC contacts from task 1. A Learning Community Attribute Instrument is also being generated from this list and will be field tested in the spring of 2010 using a combination of new LCs and LCs from the original list of successful learning communities.

Study 2: Relationship between Attributes and Impact of K-16 Learning Communities Sub-question 2 focuses on determining the relationship between the various learning community attributes, including the level or type of higher education involvement and three K-12 outcomes: student learning, classroom teaching practices, and teacher professional practices.

Sampling. We will identify a stratified sample of 20 learning communities, not part of PRISM Phase I, and their members. They will be stratified by discipline (science and mathematics) and the role of higher education participants in their learning communities. Sources of these learning communities include participants in the University System of Georgia STEM Initiative and regional MSP initiatives.

Data Collection. A variety of data will be collected for each learning community and its participants, including:

- data from the Learning Community Attribute Instrument (built as part of study 1);
- a series of outcome measures in each of the following areas:
 - student learning outcomes
 - classroom practice measures
 - teacher professional practices

Data Analysis. Data collected using the attribute instruments, including level of IHE involvement, and the outcome measures will be used to test a series of causal models using structural equation modeling (Hoyle, 1995). The goal is to identify meaningful causal models by testing the ability of different sets of attribute variables and levels of IHE involvement to significantly increase R-square, and by that process determine which attributes are most critical and how they interact relative to the three K-12 outcome measures.

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

While successful K-16 learning communities share many of the attributes of K-12 learning communities, there is a subset of attributes related to higher education faculty participation which are unique. These include emphasis on establishing equitable and contributing roles for both K-12 and IHE members, learning community organization which facilitates communication among and participation by all members, a strong and consistent focus on content, and potential to generate teaching and learning outcomes valued by K-16 educators. Another insight into K-16 learning communities is the role adopted by higher education faculty. These roles range from being a dependable resource person and colleague to fully engaging in the learning community, including reflection upon and application of the learning community work to both K-12 and IHE classrooms.

References

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