Managing a comprehensive project to enhance Math and Science in four Central Appalachian states –

Advisory Group:
- Create/obtain educators,
- Create/obtain Program Coordinators (school and school district level) in 38 counties (41 school districts)
- Management system representing levels of responsibility from K-12 and IHE partners which provide true partnership status,
- Activities such as science institutes, fall academies and planning meetings centered at partnering K-12 schools and IHEs.

Developing sustainable initiatives to achieve the program goals:
- Hiring mathematics and science outreach engagement content teachers, with nationally established reputations.

AmSP Goals
- 1) To eliminate the achievement gap in science and mathematics for pre-K-12 students in the central Appalachian region
- 2) To build an integrated pre-K-16 education system which ensures the selection, development, and support of a diverse, high-quality mathematics and science teacher workforce.

Programmatic Components of AmSP

Access to Algebra
Access to Algebra, a distance learning program that provides high quality Algebras instruction to high school students and their teachers as a professional development component. After initial development at one partnering IHE, the course is being offered to other universities in the state. An online placement test for college readiness aspects the technology developed by the Access to Algebra program and is being leveraged by other institutions in Kentucky.

Reducing the Student Achievement Gap in K-12 Mathematics and Science

<table>
<thead>
<tr>
<th>Grade</th>
<th>Science Participation</th>
<th>Science Maturity</th>
<th>Science Performance</th>
<th>Math Participation</th>
<th>Math Maturity</th>
<th>Math Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>12th Grade</td>
<td>55%</td>
<td>0.34</td>
<td>0.50</td>
<td>90%</td>
<td>0.60</td>
<td>0.70</td>
</tr>
<tr>
<td>11th Grade</td>
<td>76%</td>
<td>0.50</td>
<td>0.60</td>
<td>97%</td>
<td>0.65</td>
<td>0.75</td>
</tr>
<tr>
<td>10th Grade</td>
<td>81%</td>
<td>0.60</td>
<td>0.70</td>
<td>98%</td>
<td>0.70</td>
<td>0.80</td>
</tr>
<tr>
<td>9th Grade</td>
<td>85%</td>
<td>0.65</td>
<td>0.75</td>
<td>99%</td>
<td>0.75</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Indicators of Success

- Increased demand by K-12 partners for teacher identified math & science education needs to be met by K-12/16 teacher professionals
- Ongoing foundation support to expand successful AmSP programs

Stringent and Effective engagement Partnerships with K-12 districts and IHE faculty –

AmSP influence
- 88% changed the instructional materials and/or content used in their courses
- 86% influenced their teaching methods
- 73% changed the instructional content of courses in their department
- 75% changed the teacher preparation curriculum at their institution

Conclusions:
- Influence on individual professors' slightly greater than on their departments
- Individual and departmental influence highly correlated, especially between departmental course content and individual teachers

What would we like to know from the other MSFs?

What have other universities in AmSP done to include K-12 engagement content faculty in promotion, tenure, and the reward program?

What has been done in participating universities to organizationally and financially sustain their best practices?

Sustainability of the AmSP IHE K-12 Network, its Outreach Professionals and best practices through the foundation and financial support of an Institute and the success in obtaining progressive increases in the external support.

Listening and Responding to Partners

Evaluating AmSP impact:
- Utilizes the technology developed by Access to Algebra and is likewise being adopted by other AmSP Master Teacher Projects and/or content used in their courses
- 88% – 95% of teachers participating in AmSP programs have changed their teaching methods
- 73% – 86% of teachers participating in AmSP programs have changed the instructional content of courses in their department
- 75% – 86% of teachers participating in AmSP programs have changed the teacher preparation curriculum at their institution

AmSP Faculty Partners Have Been Positively Affected By Engagement Partnerships with K-12 Teachers and Schools

Activity Details:
- Conducted by IHE: 2004-2007
- 257 Faculty members
- 701 teachers
- 36,000 students
- 20 school districts
- 12 partners
- 12 districts
- 12 faculty

AmSP NSF Supplement at Marshall University, Huntington, WV

AmSP NSF Supplement at Morehead State University, Morehead, KY

AmSP NSF Supplement at Virginia Tech, Blacksburg, VA

The Partnership Enhancement Project (PEP) Model has been adapted for statewide expansion.

Principal “Take-Away” Finding

At a time when local expertise and individual teacher knowledge have been disconnected, disadvantages and even dismissed, the AmSP has taken a decidedly different stand – seeking out, honoring and cultivating the local voice. One of their operating assumptions was that a top-down theory of action would not take root in the mountains of Appalachia. By most accounts, the AmSP was on something...