SMTI

A Partnership Approach to Improvement in K-14 STEM Learning

The *Mid-Valley Mid-Coast Partnership* (Partnership) lead by OSU president Ed Ray, has identified a collective focus on math instruction as an important focal point for improving student success in making critical transitions in school and completing a post-secondary credential or degree. The Partnership has been identified as a Regional Achievement Collaborative by the state of Oregon with modest funding in support of the governor's education broad agenda. The Partnership includes the five major school districts, the regional Education Service Distict, two community colleges, and OSU College of Education and OSU Mathematics. The work being initiated builds on the results of two studies by the Parnership: (1) Interviews with second year OSU students and regional administrators about impediments for transition to college and (2) a quantitative study of the trajectory of math course-taking from grade 9 to post-secondary math with a focus on the role of remedial math. From this work our view is that attaining higher rates of completion of post-secondary credentials and degrees across demographics will come from an initial tight focus in the critical area of math then expanding to instruction in all of STEM. The Partnership is committed to:

1. Development of effective instruction in mathematics elementary through introductory college math
2. Broad changes in community and student attitudes towards mathematical knowledge and its use
3. Overcoming long-standing obstacles to collaboration among schools, community college, and university

Mathematics performance of students elementary through college is the single biggest factor slowing educational progress for most students. Compared to an "average student" who completes intermediate math, there is a 10% increase in the probability of completing college for those who complete algebra/geometry. The average student increases their change of completing college by another 10% by completing advanced algebra.[1]

Beginning this summer, the Partnership will be designing professional development in mathematics instruction at scale for approximately 250 math/science teachers including elementary impacting over 35,000 students. The project involves examination of teaching practices, ESOL instruction, school & community climate, counseling, leadership, and performance in and attitudes towards math. Grounded in the Common Core, the focus on math academic language development supports strategies for improving achievement with English language learners and addresses the declining achievement by boys. Research on teaching practice supporting the project emphasized equitable access to and demonstrated performance on rigorous content. Our project is informed by work at the University of Michigan and the University of Washington among others. A large project database will be managed by the Linn-Benton-Lincoln Educational Service District, which will generate the metrics for maintaining internal accountability to specific project short and long-term goals. This focus supports implementation of the Common Core State Standards in Math and Literacy and resonates with the Next Generation Science Standards emphasis on modeling, argumentation, and forming explanations with evidence. These Common Core Standards have adopted and we expect the NGSS will soon be adopted by the state.

[1] Rose, H., & Betts, J. R. (2001). *Math Matters.* Public Policy Institute of California.