

Localizing Teacher Leadership Expertise in Appalachia

Project Goal and Outcomes

1. To establish a significant teacher leadership component in central Appalachia that will provide a sustainable base of expertise in the integration of content knowledge and instructional methods in mathematics and science education.
2. To synergize partnerships between school district personnel and IHE faculty to accelerate long-term educational improvements and expand effective cross-institution coordination.

Expected Outcomes:

- Increase retention of high quality mathematics and science teachers,
- Strengthen the mentoring networks and partnerships in Appalachia,
- Integrate content with reflective instructional methods (i.e. formative assessment and differentiated instruction),
- Improve professional development in mathematics and science education, and
- Continue research on the reform of rural mathematics and science education.

Project Definition of STEM:

Effective teaching in STEM encompasses three broad dimensions comprised of distinct teacher capacities and actions.

Planning and preparation for instruction: design units of study to surface and address student conceptions; organize learning experiences along a learning progression; develop and reinforce processes; and link targeted content to “big ideas” in the discipline.

Implementing instruction: foster exploration and investigation; promote evidence-based thinking, argument and rationale; monitor student status and adjust activities accordingly; and foster a culture that respects intellectual rigor and collaborative creation of knowledge.

Creating a supportive context for effective instruction: align curriculum with state standards and articulate it across grade levels/courses; facilitate accessibility to quality curricular materials and instructional resources; align grading policies with standards and desired outcomes; promote active administrator support for the vision of STEM instruction; provide collegial support for ongoing teacher learning and improvement.

Projects Theory of Action:

The Master Teacher project, focused on key elements that provided leverage points, both within the AMSP and in the larger context of state STEM education reform initiatives – classroom formative and summative assessment; instructional unit design; standards-based grading; instruction designed to address diverse learning needs; and building a positive classroom culture for learning.

Lessons Learned from the Project to-date:

- Shifts in teachers’ beliefs, perceptions, and practice tend to follow a recursive process.
- Maturing of the network can be a significant contributor to enhanced reflection as some participants model it and reinforce its value to the others.
- Significant shifts in perceptions and practice require time
- Maintaining administrator attention, awareness and active support is a continual challenge exacerbated by changes in administration over the course of the project.
- Opportunities for involvement at the state and national levels need to be designed into projects involving rural teachers.
- Student achievement is improving in the classrooms that are facilitated by the Master Teacher.

Basis for Assertions:

Because of the small number of participants in the project (18), the evaluation takes a descriptive/qualitative approach with limited quantitative analyses as appropriate. Evidence is gathered through regular completion of perceptual inventories, classroom observations, reflective prompts, activity/implementation logs, interviews/focus groups, and trend data on student achievement.

ACT Data

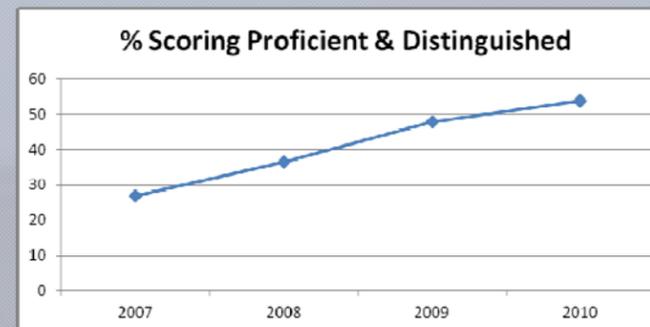
Year	# Of Juniors Taught	Junior Average
2008	75 out of 130	15.1
2009	102 out of 158	17.1
2010	95 out of 150	18.3

The Junior Average is the total average of all juniors that took the ACT during the spring state-testing window for ACT. In each year, Mr. Allen taught over half of the juniors at Sheldon Clark High School.



Math results for Casey County HS on state assessment

2007	26.99% P/D
2008	36.36% P/D
2009	47.88% P/D
2010	53.76% P/D



The Master Teacher worked strategically with the entire math department beginning in the Fall of 2009.

Clay County High School’s AP Calculus Exam Results for students taught by Master Teacher, Jennifer McDaniel

School Year	# Enrolled	Scored 3	Scored 4	Scored 5	Avg. Score
09-10	16	1	0	0	1.188
10-11	19	8	3	2	2.895

Evaluators: Eugenia Toma and Michael Howard
Publications can be found at: <http://appalachia.mspnet.org>

