Fort Hays State University and Pittsburg State University will offer a two-week workshop June 4-7 and 11-14, 2012 for High School and Middle School Science teachers.

The workshop, Physical Science Modeling with Mathematics, is supported by an improving Teacher Quality Partnership grant administered by the Kansas Board of Regents and convenes concurrent sessions at the PSU and FHSU sites.

The workshop focuses on a nontraditional pedagogical approach to teaching science and mathematics that develops student content understanding through inquiry in a learner-centered instructional environment. Teams of teachers as well as individual teachers are encouraged to apply.

Workshop Goals:
- Improve instructional pedagogy by implementing research-based instructional strategies, inquiry methods, critical and creative thinking, cooperative learning, use of standardized evaluation instruments, and effective use of classroom technology in instruction.
- Enrich content understanding in physics, chemistry, and mathematics by using multiple representational tools for constructing scientific models in these disciplines.
- Learn effective pedagogical strategies from veteran educators who model these strategies throughout the workshop.
- Participate in an on-going collaboration among the partners through a state-wide professional learning community of modeling teachers.
- Enhance/improve science curriculum in your school district.

Why Modeling Instruction?
Extensive research supports the effectiveness of the Modeling approach in enhancing student learning. A comparison of traditional instruction, Modeling students score an average of about 1.5 standard deviations higher on assessments of conceptual understanding of physics.

Support for Participants:
- $150 worth of classroom technology.
- A daily stipend
- Free housing
- Free parking
- Funds to attend KATS Kamp 2013
- Academic year support

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Application Form at: http://www.fhsu.edu/smei/Teacher-Education-Workshops

June 4-14, 2012

Physical Science Modeling with Mathematics
Workshop
Learn Modeling Instruction for Physical Science with Mathematics Applications

A Practical Two-week Summer Workshop for Kansas Teachers

Transform your science or math classroom using proven, highly effective science teaching methods and curriculum. This workshop focuses on physical science and mathematics for middle school or high school. Modeling Instruction (MI) is based on extensive research, developed by Arizona State University and pioneering teacher teams over the last 20 years. MI works for diverse student groups—from economically-challenged-rural schools to private schools, and is well suited for differentiated learning. Through MI, students discover the joy of learning and mastering science. They move beyond memorizing science facts to solving problems and innovating because they learn scientific thinking skills.

What is Modeling Instruction?

MI is a method of teaching that uses hands-on learning experiences to help students make sense of evidence, comprehend and then apply science principles. During this process, students explore their personal beliefs and then reconfigure them to better match evidence and science. With standard science instruction, students’ personal beliefs typically remain intact, yet contradict basic principles of science. Students who lack a sufficient grasp of science principles will resort to rote methods to get through science courses, yet fail to truly understand the science.

With MI, students participate, investigate and then present what they observe and believe to fellow students. Scientific principles are represented as “science models” that students compare to their “personal models”. Mathematics is used as a representational tool to describe the model. Once students discover and embrace these science models, they quickly build more knowledge on these modeling scaffolds. As teachers fully implement MI, their students perform at a higher level because they become self-motivated learners and critical thinkers.

Content

In this two-week program, teachers will be trained in the fundamentals of MI methodology. Teachers will learn techniques of instruction from the students’ and teachers’ perspectives. As training progresses, teachers will be coached in roles that build effective discourse, analysis of events and conceptual understanding. Teachers will become able to adapt principles and technologies to their school context. Teachers may bring their own equipment, otherwise equipment will be provided. Manuals and curriculum are also provided. Academic year follow up activities and support are planned to assist with successful implementation. District administrator training is also provided so teachers are effectively supported.

Modeling Instruction is one of only two high school science programs to receive an exemplary citation from the U.S. Department of Education