

# Education Partnership Conference

## Presentation Précis

**Holiday Inn  
Torrance, California  
March 11 – 12, 2005**

**Friday March 11, 2005**

**10:15 - 11:45      Concurrent Breakout Sessions: Challenging Courses and Curriculum**

*Kiku*

Chris Schunn and Matt Mehalik (University of Pittsburgh).

*Teaching all students core, difficult science concepts through authentic project-based learning: The example of the Alarm Systems Immersion Unit for middle school students.*

One of our goals is to have all students engage every year in an extended, in-class, authentic science full-cycle inquiry project (typically 4-6 weeks in length). There are many challenges to making that happen in urban districts, but we have made progress, thinking through how to create such experiences that align with state standards, maximize the learning gains from the in-depth experience, develop sustainable in-district support, align with IHE resources for in and pre-service connections, etc. Our presentation will give participants a concrete experience with one of our projects as present student performance data from an experiment in which we contrasted our approach with scripted hands-on inquiry.

*Sakura*

Don Paulson (California State University Los Angeles).

*Active and Cooperative Learning in the Science Lecture Class.*

Active learning is a process in which students are actively engaged in the classroom and not just passive listeners. Students do not learn much sitting in class listening to teachers, memorizing prepackaged assignments and spitting answers back on exams. Learning should involve the development of student skills in analysis, synthesis, evaluation, *etc.* rather than just the transmission of information. Active inquiry, not passive absorption, is what engages students.

Active learning techniques are those activities that an instructor incorporates into the classroom to foster student learning. This includes everything from listening practices which require the students to absorb what they hear, to short writing exercises in which students react to lecture material, to complex group exercises in which students apply course material to "real life" situations and/or to new problems.

This session will show how effective these techniques can be in improving student performance in science lecture classroom. This workshop will provide examples of many such techniques and illustrations of their use. Since college faculty are unlikely to change their mode of instruction without significant evidence that active learning techniques improve student learning, pedagogical research which indicates the effectiveness of these techniques in improving student learning will be briefly presented.

*Pacific 1* Rosanne Fulton, and others (Denver Public Schools and Metropolitan State College of Denver).  
*Disciplinary Literacy in Course Redesign Work for Biology, Algebra and Geometry.*

*Pacific 2* Mike Lauro and Claire Pollard (Providence Public Schools).  
*Physics and Algebra for all 9<sup>th</sup> Graders.*

Our discussion will focus on the key components in the implementation and support of rigorous coursework for **all** students. We will specifically address what Providence has done and is doing to make Algebra 1 and Physics a minimum requirement for all 9<sup>th</sup> graders. We will examine what has happened with mathematics across K-12 in our district and the challenges we face because of our district policy that Algebra 1 is the minimum course for 9<sup>th</sup> graders. Some of the issues for discussion are professional development for teachers and administrators, rigorous coursework at all levels, safety nets and support systems for students, and parental/community support and involvement.

The session presentation will continue with PPSD initiatives for a Physics First Curriculum for all 9th grade students. Topical points will include the current condition of national trends for the Physics First Agenda, a rationale for implementing Physics First Pedagogy in the PPSD, a gap analysis of implementation requirements for start up, and needs assessment of IHE support and resources for long-term sustainability of the curriculum. Our Session will conclude with a roundtable review and reflection of two case studies which capture the potential for this curriculum.

**2:00 - 3:30** **Concurrent Breakout Sessions: Teacher Quality, Quantity, and Diversity**

*Kiku* Dave Brant and Virginia Mann (University of California Irvine - FOCUS).  
*Ramping up STEM Teacher Education in the UC Environment: The Future Teacher Highway for Single and Multiple Subject Candidates. PreK/K SMARTS: An Early Start on Math and Science Enrichment.*

The University of California has not played a large role in the training of new teachers for California. Typically UC departments do not articulate the training of teachers as one of their missions, and it is generally perceived that California high school students who wish to prepare to become teachers do not select UC for their post-secondary education. Nevertheless, many very capable students enter UC conscious of teaching as one possible career option, an option that often grows more attractive upon exposure to teaching through tutoring or classroom experiences or because entering career goals prove to be less engaging than originally imagined. The FOCUS Future Teacher Highway seeks to provide

well-defined curricular pathways into teaching for UCI STEM majors who at some point decide to pursue teaching as a career. Such pathways need to have multiple entry points and to provide students with appropriate curricular support prior to entry into a post-baccalaureate credential program. We are building these pathways on STEM Subject Matter Preparation programs accredited by the California Commission on Teacher Credentialing coupled with active teacher recruitment and meaningful classroom experiences sponsored by FOCUS. At the same time we are creating an undergraduate pathway to elementary teaching that features strong emphasis on preparation in mathematics, science, and literacy development. Our presentation will describe these efforts in some detail.

*Sakura*

Richard Audet, (Roger Williams University), Linda Jordan (Tennessee State Department of Education), and Tomas Ramirez (Providence Public Schools).  
*Getting It Right: Optimizing Professional Learning Opportunities for Teachers.*

As one observer of the educational scene remarked, "Of all of the variables that we can control, teacher quality has the greatest effect on student learning." Because teachers make the final decisions about what gets taught and how instruction is delivered, professional development is the key to enhancing teacher performance. Therefore, it is critical that the professional learning experiences provided to K-12 teachers be absolutely on target. Support networks, such as those created by NSF and state Mathematics and Science Partnerships, address important teacher quality issues. Ultimately these projects exert a powerful influence on improving student achievement in science and mathematics.

This session addresses two SCALE project goals: Coherent Teacher Preparation and Immersion Units. In light of the upcoming NCLB mandate that state science assessments be aligned with state standards, it has never been more important for teachers to offer instruction and a curriculum that carefully targets standards. We will introduce models and demonstrate Internet-Based tools that support standards-based curriculum, instruction, and assessment practices. Participants will be provided with the *Teaching and Learning Resources for the Standards-Based Classroom CD*.

*Pacific 1*

Linda McQuillen, Brian Sniff (Madison Metropolitan School District) and Bob Wilson (University of Wisconsin-Madison).  
*Title IIB Math Masters One-Credit Courses.*

*Pacific 2*

Kamal Hamdan (California State University Dominguez Hills).  
*Transition to Teaching Funded Program: Lessons Learned Regarding the Recruitment and Retention of Future Math and Science Teachers.*

## Saturday March 12, 2005

### 10:00 - 11:30 **Concurrent Breakout Sessions: Partnership Driven**

*Kiku* Shelley Kriegler (University of California Los Angeles) Math Educators and Mathematicians Collaboration. Jody Priselac (University of California Los Angeles). Heather Calahan (University of California Los Angeles), Bruce Rothschild (University of California Los Angeles).

*Sakura* Todd Ullah, Rachael Nunez Espinoza (Los Angeles Unified School District), Dave Mayo (California State University Los Angeles), Judith Lemus and Linda Duguay (University of Southern California).  
*LAUSD and University Partnerships in Science Education.*

### 12:45 - 2:00 **Concurrent Breakout Sessions: Institutionalization and Sustainability**

*Kiku* Chuck Hohm and Joe Braun (California State University Dominguez Hills)

*Sakura* Merle Price (SCALE/IFL)  
In this breakout session, the presenter will first engage participants in an analysis of the lessons learned from mathematics and science reform in the 1950s and 1960s. Rodger Bybee, former BSCS Executive Director, presented reasons that these reforms failed at a symposium in 1997. The factors included resistance to replacement curriculum, the nature of educational change, need for more teacher support, need to engage the larger math and science community, the realities of educational political and governance structures, and the lack of equity in implementation. Participants will reflect on how these factors might be overcome by SCALE and QED. Century and Levy also identified factors leading to sustainability which will be analyzed with respect to SCALE and QED. Michael Fullan's latest book on Leadership and Sustainability offers further insights. He posits the need for public service with moral purpose, commitment to changing context at all levels, lateral capacity building through networks, intelligent accountability and vertical relationships, deep learning, dual commitment to short-term and long-term results, cyclical energizing, and the long lever of leadership. Each of these features of sustainability will be delineated in more detail and the relationships to SCALE and QED explored in order to arrive at conclusions for sustainable implementation.

*Pacific 1* Susan Tucker( )