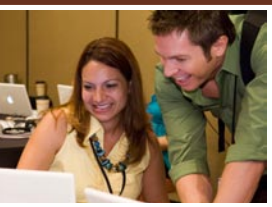



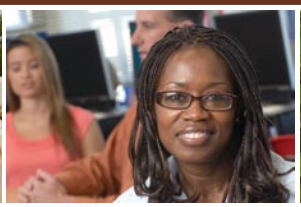


## Highlights of Upcoming Events

**August 15-September 26**
National Board Certification Pre-Candidacy Class (Online)

**September 9**
Content Coaching Forum

**September 22-24**
Year Two Mentor Academy (Tucson)

**September 29-October 1**
Year One Mentor Academy (Phoenix)

## *Did You Know* ??

***Biosphere 2** derives its name from the idea that it is modeled on Earth, the first biosphere.*

*It is a **3.14** acre facility with **7,200,000** cubic feet of sealed glass and **6,500** windows.*

*It is sealed from the earth below by a **500-ton** welded stainless steel liner.*

## STEM Collaboration Inspires Authentic Inquiry

The soul of science is inquiry. How do things work? What does our environment consist of? How did we get here? Where are we headed? These are just a few of the innumerable questions science seeks to answer.

Yet at times in teaching science, that sense of wonder and discovery is absent. Often it's because teachers lack the content expertise to make science truly come alive. That's why the Arizona K-12 Center was particularly excited to partner with the Arizona Center for STEM Teachers at their inaugural Summer Institute for Arizona's Science, Technology, Engineering and Math (STEM) teachers at Biosphere 2.

The first Arizona Center for STEM Teachers Summer Institute, A State of Wonder, was held at the University of Arizona's B2 Institute at Biosphere 2 in Oracle, beginning July 8th. For 18 days, a cohort of 35 fourth- to eighth-grade teachers immersed themselves in the world of science. Selected from over one hundred applicants, these teachers represented a diverse range of experience, from those just beginning their practice to more seasoned educators.

The Institute offered a rich array of opportunities for bringing science alive in the classroom. Working side by side with researchers from the University of Arizona, participating teachers were exposed to the science that surrounds us. For example, they learned to assess water quality and conservation in a manner they can easily apply in school. They studied leaf sizes of plants to determine rate of growth and other characteristics. Insect traps were created to survey the area's insect life and to identify their behavior patterns at different times of day.

Collaborating with the University of Arizona and Science Foundation Arizona's STEM Education Center, the Arizona K-12 Center's role was to support the Lead Teachers and provide technology training for the participants.

Michael Shapiro of Orangewood School is taking a closer look at ordinary things to find the extraordinary.

"The Arizona K-12 Center is absolutely central to the success of this program," says Pierre Meystre, Director of the B2 Institute. "Not only have they been key in the selection and recruitment of the lead teachers, but they also offered superb technical training. I believe strongly that the collaboration between B2 and the Arizona K-12 Center will increase significantly in the future and develop into a very powerful tool in support of Arizona STEM Teachers."

### STATE OF WONDER
### AT THE BIOSPHERE

One defining aspect of the Institute was that it was a program designed by teachers for teachers. The team of teacher leaders focused the content on addressing realistic classroom capabilities. The result was a program that participants could immediately connect with.

"Everything the teachers did and learned they can apply in their classes," says Sarah Baird, one of the teacher leaders. "It was exciting to see them get engaged and refocused on teaching science."

In addition to working with scientists, the teachers gained important knowledge from one another as well. The Institute offered

*Continued on back*

## STEM Collaboration Inspires Authentic Inquiry

*Continued from front*

ample opportunity for quality conversation among participants on standards and how they can provide authentic teaching in science, rather than resorting to cookie cutter experiments. Each teacher prepared a digital presentation in the form of a movie, slideshow or podcast which they shared at the end of the Institute on what they learned, which they will ultimately use with their students as well.

"This was different than any experience these teachers have ever had," says Baird. "We sent them home with everything they needed including knowledge, materials and resources to introduce this content into their classrooms. They were already good teachers when they got here. They left energized, informed and eager to apply the new ideas they picked up."

The Institute was funded in part by Science Foundation Arizona with the goal of providing STEM training for 300 teachers over three years. Pending funding approval, plans are in the works for next year's Institute, which will focus on K-3 grades.

"Teachers need more support in STEM areas," says Darcy Renfro, Executive Director of Science Foundation Arizona's STEM Education Center "and we're working to make that available. The participants of this Institute were so enthused they wished it could have been even longer."

Knowing how precious time is to teachers, that is quite an endorsement.

> *"It was exciting to see them get engaged and refocused on teaching science."*

Patti Grube of Wilson K-8 in Tucson and Tracey Dodrill of Mohave Middle School in Scottsdale collaborate on research.

## EVENT SPOTLIGHT

### *Understanding by Design* with Grant Wiggins

| | |
|---|---|
| **Dates** | September 30, 2009 |
| **Location** | Desert Willow Conference Center<br>4340 East Cotton Center Boulevard |
| **City** | Phoenix |
| **Times** | 8:00am-4:00pm<br>(Registration 8:00-8:30am) |
| **Cost** | $25 |
| **Deadline** | 9/14/2009 |

*Understanding by Design (UbD)* is a framework for improving student achievement through deepening student understanding. *UbD* works within the standards-driven curriculum to help teachers clarify learning goals, devise revealing assessments of student understanding, and craft effective and engaging learning activities. *UbD* will be presented by nationally recognized educator Grant Wiggins, who along with Jay McTighe, developed this framework. *UbD* includes a three-stage "backward planning" curriculum design process anchored by a unit design template; a set of design standards with attendant rubrics; and a comprehensive training package to help teachers design, edit, critique, peer-review, share, and improve their lessons and assessments.

## LEADERS IN ACTION

**BRIANA GRYZYNGER** First grade, Tucson Unified School District, NBCT

**LEAH ESMONT** Curriculum Coach, Washington School District, NBCT

**SARAH BAIRD** Math Coach, Kyrene School District, NBCT, and 2008 Teacher of the Year

**GREG STAFFORD** High School Physics, Gilbert School District, NBCT

The STEM teacher training at Biosphere 2 would not have been possible without the planning and guidance of the teacher leader team consisting of Leah Esmont, Sarah Baird, Greg Stafford and Briana Gryzynger. They worked together to design the curriculum to give participants learning opportunities that would translate easily into their classroom environments. They also provided ongoing direction to the cohort of 35 teachers throughout the 18-day program, ensuring teachers understood how to make the most of the opportunity.

"This was professional development by teachers for teachers," says Greg Stafford. "We forged a strong bond that allowed us to respond to the participants' needs."

One request that came up was for less preparation time and more time "under the glass", meaning within the Biosphere 2 itself. So the team arranged with the Biosphere 2 staff to extend the periods of time they could work inside it. For their leadership as well as their flexibility, the team received high marks from both participants and organizers.

"It was incredible," says Briana Gryzynger, "we each have our areas of strength and complemented one another. We put a lot into planning the Institute and then the three weeks themselves. It was all worth it to see those teachers leaving so excited and invigorated about going back to their classrooms to teach science."

> *"It was all worth it to see those teachers leaving so excited and invigorated about going back to their classrooms to teach science."*