CREST Receives New Grant

The Virginia Initiative for Science Teaching and Achievement (VISTA) is a partnership among 47 school districts, six universities, the Virginia Department of Education, and private sector companies to provide sustained, intensive science teacher professional development to increase student achievement. The goal of VISTA is to improve science teaching and student learning throughout Virginia especially in high-need (high-poverty, high minority) schools. Professional development will be offered to the following four groups of educators:

- **Elementary Teachers** - Upper elementary (grades 4-6) teachers experience scientific, problem-based learning and student-centered inquiry as they work in teams from their school to conduct inquiry-based science for children. They participate in a four-week summer institute and follow-up academic year support including a coach in their school and attending the VAST conference.

- **Secondary Teachers** - Uncertified or provisionally licensed secondary (grades 6-12) science teachers are provided just-in-time coaching and “big picture” research-based teaching coursework for two years. The first course starts in August for one-week with follow up sessions during the fall semester. In addition they have coach in their school during the academic year and attend the VAST conference.

- **School Division Science Coordinators** - New science coordinators focus on honing science leadership skills, developing district-level inquiry-based science strategic plans, developing effective teacher and leadership capacity through science communities of practice, and using data to make program decisions and improve student achievement.

- **Science Education Faculty** - VISTA builds an infrastructure to support the collaboration of science education faculty statewide to identify challenges and develop solutions in science teacher education at the licensure and advanced levels and learn about new research in effective science teacher development and science teaching.

For more information about this exciting, statewide initiative, please visit the VISTA website (http://vista.gmu.edu).

Revised Science Standards and Curriculum Framework Online

School divisions are expected to begin implementation of the revised standards by September 2011. The Virginia Board of Education adopted the revised *Science Standards of Learning* on January 14, 2010 and the Curriculum Framework on November 18, 2010. The revised science standards and curriculum framework are online at: http://www.doe.virginia.gov/testing/sol/standards_docs/science/review.shtml

PhD Science Education Leadership New Group Starting Fall 2011

A new group of doctoral students in Science Education Leadership will begin in fall 2011. The Science Education Leadership Program offers a unique part time PhD in Education degree for educators interested in Science Education Leadership K-12. The program prepares individuals for leadership positions in science education which could include positions as state or national organization leaders, college or university faculty or researchers, school or central office leaders, and curriculum and instructional materials developers. Information can be found online at: http://gse.gmu.edu/programs/science/academics/. For further information please contact Donna R. Sterling dsterlin@gmu.edu or 703 993-2022.

PhD Science Education Research Starts This Fall

The major thrust of the science education research concentration is to prepare students for 21st century
classrooms, to be collaborative, to produce and enhance critical thinking skills, and to embrace and foster creativity. We will prepare students as researchers and to collaborate with teachers and professors. The doctoral concentration in science education builds on the Advanced Master’s degree programs providing academic and professional education for those interested in obtaining positions as scholars at institutions of higher education.

There is a national need for researchers who are knowledgeable about science education reform, science teacher education, research, non-formal science education, and science curricula. This program is designed to produce individuals who have expertise in these areas. For further information please contact Len Annetta lannetta@gmu.edu or 703 993-5249.

### U.S. – Russia Teacher Professional Development

Здравствуйте! Co-PIs Wendy Frazier (CREST) and Rebecca Fox co-direct U.S.-Russia Teacher Professional Development Project (USRTPD) for language, science, technology, and mathematics teachers in Far East Russia and the United States. Funded by US Department of State, the theme of the project is “teacher leaders think systematically about their practice and learn from experience.”

The USRTPD provided an exchange of teachers between the previously unserved Primorye region of Far East Russia and the mid-Atlantic region of the US. From this remote region of Russia, twenty English, science, technology, and mathematics teachers received four weeks of professional development in Fall 2010 at Mason. During the spring semester, the following five teachers from the US traveled with Drs. Fox and Frazier to Far East Russia: Douglas Cullen, Mislí McDaniel, Dennis McFaden, Betsy Sandstrom, and Robin Taylor. The spring trip included observations of instruction at the urban and rural schools in Russia of the 20 teachers, and the experience culminated in a Teachers-As-Researchers Conference on May 14 in Russia. This conference was the first of its kind in the region and provided an opportunity for Russian and US teachers to share with their peers about their experiences and continuing collaborative action research projects. Additionally, Drs. Fox and Frazier have initiated conversation with administrators from the region’s university system regarding potential collaboration with Mason’s CEHD. Dr. Mollianne Logerwell (PhD 2009) serves as program evaluator. For more details, please see [http://cehd.gmu.edu/usrtpd](http://cehd.gmu.edu/usrtpd). Also, please see [http://usrtpd.wordpress.com](http://usrtpd.wordpress.com) for our trip blog and [http://www.youtube.com/user/USRTPD](http://www.youtube.com/user/USRTPD). До свидания!

### Science Safety Game Development

STIMULATE (Science Training Immersive Modules for University Learning Around Teacher Education) completed its final data collection for the Serious Educational Game to train science teacher to manage a safe laboratory environment, complete safety audits and organize chemical closets. The $250,000 National Science Foundation project provided a proof of concept training measure for prospective science teachers from North Carolina State University and George Mason University over two years. For further information please contact Len Annetta lannetta@gmu.edu or 703 993-5249.

### Students Design Games about Renewable and Reusable Energy

GRADUATE (Games Requiring Advanced Developmental Understanding Around Technological Endeavors) completed its mission in North Carolina and is beginning in two high schools in Spotsylvania County. Partnership with Jean Young, Meredith Lohr, Jon Miller, Kelly Montana and Robert Thomas from both Spotsylvania High School and River Bend High School will work with at least 80 rising seniors to created Serious Educational Games about renewable and reusable energy concepts that align with the Standards Of Learning. These student created games will be held in a repository for teachers across the state to use in their classes. For further information please contact Len Annetta lannetta@gmu.edu or 703 993-5249.

### Student Funding

Peggy Koenig joined CREST as a 10-hour per week graduate research assistant this spring to assist with program evaluation and research for the new VISTA project. Liz Baynard completed a 20-hour graduate research assistantship in May with CREST.

### New Grant Award

Congratulations Dr. Baynard

Dr. Elizabeth Baynard defended her doctoral dissertation on March 23, 2011, titled “An Investigation Into the Relationships Among Middle School Teachers’ Beliefs About Collaboration, Their Perceptions of Formative Assessment, and Selected Teacher Characteristics.” Committee members were Erin Peters Burton (epeters1@gmu.edu), chairperson, Gary Galluzzo (ggalluzz@gmu.edu), and Dimiter Dimitrov (ddimitro@gmu.edu). CREST wishes you the very best in your future endeavors, Liz!

VISTA Staff Welcomed!

Eric Rhoades joined the initiative in December 2010 as Director, where he coordinates statewide program development and implementation efforts for the four VISTA programs. Previously he served as the science coordinator for the Virginia Department of Education and the supervisor of mathematics and science for Stafford County Public Schools.

Karla Ver Bryck Block joined the VISTA project in January 2011 as Director. She coordinates the research, evaluation, and fiscal components of VISTA. She comes to George Mason University from the U.S. Department of Education where she served 18 years working on international programs.

Maria Vance is the Business Manager for the VISTA project. She transferred from the College of Science where she was the Budget Analyst. As part of the VISTA team she manages the funds of the grant to verify that all expenditures meet federal, state, and university policies.

Mari-Elaine Triolo is the VISTA Administrative Assistant. Previously she worked as the Administrative Assistant in the Department of Physics and Astronomy. This fall is the last year in her Master’s Degree in Community Agency Counseling in the Counseling and Development program in the College of Education and Human Development.

CREST Science Camps Are Full for 2011

CREST science camps for children entering grades five through seven in July and August 2011 are full. CREST utilizes camp experiences to provide science enrichment experiences for our community’s youth while providing an authentic context for training teachers in how to effectively use problem-based learning to teach elementary science. Camp details and registration are posted on the CREST website. http://cehd.gmu.edu/crest/camp/

Doctoral Students in Science Assist in Elementary Schools

Mason doctoral students assist in teaching science in elementary schools. This program is a partnership with the Volgenau School of Information Technology and Engineering and the College of Education and Human Development at George Mason University, and seven schools in three school divisions (Alexandria City, Fairfax County, and Manassas Park City Public Schools). The SUNRISE program (Schools, University ‘N’ (and) Resources In the Sciences and Engineering) is for graduate students in science, technology, engineering, and mathematics to assist elementary school teachers with science teaching. The graduate students spend ten hours a week in the elementary classroom with the students of a teacher in grade 4-6. For more information visit http://sunrise.ite.gmu.edu.

Research Findings for New Teachers: Provide Quality Training

The research report, Supporting New Science Teachers: What School Leaders Can Do, by Drs. Donna R. Sterling and Wendy M. Frazier at George Mason University identifies support that helps new science teachers as they start teaching.

The report reveals that quality professional development while teaching is taking place has a major positive impact on teaching and student learning. The National Science Foundation funded research suggests that schools:

- Establish a partnership with a local college or university to provide quality courses for new teachers in how to teach and assess science.
- Provide quality training for those who provide in-class support in how to support and mentor new teachers.

Training in how to teach science goes beyond just immediate support in the classroom to help the new teacher survive. Providing a well organized course to help new teachers see the “big picture” of teaching, assessment, and research on effective instruction is needed to help teachers look at teaching from a professional perspective. New teachers need help to plan lessons, identify effective teaching strategies, organize laboratory activities, identify common misconceptions of students, assess learning, and adapt lessons to the special needs of learners including English language learners. By providing courses in science teaching, new science teachers were able to perfect their teaching and enhance student learning. The report can be found at: http://cehd.gmu.edu/assets/docs/crest/SupportingNewScienceTeachers.pdf
Student and Faculty Presentations and Publications

- Leonard A. Annetta (February 21, 2011). Flattening the geographic world through 3D gaming worlds. National Taipei University of Education.
- Leonard A. Annetta (February 17, 2011). Next generation serious educational games. National Chiayi University, Chiayi, Taiwan.
- Leonard A. Annetta (February 16, 2011). Getting serious about educational games. National Changua University, Changua, Taiwan.
- Donna R. Sterling, Eric M. Rhoades, & Karla S. Ver Bryck Block, (2011, February). VISTA: Leveraging Mason’s Successes. Symposium conducted at George Mason University, Fairfax, VA.
- Elizabeth Folta, Leonard A. Annetta, & Rebecca Cheng (January 21, 2011). Designing mSEGs for environmental literacy. Paper presented at the annual meeting of the Association for Science Teacher Education, Minneapolis, MN.
- Jacqueline T. McDonough, Donna R. Sterling, David Slykhuis, Tricia Easterling, Randy Bell, George Meadows, Claire Berube, V. McCall, Daniel


**Program Information on the Web**

**Initial Teacher License**

Mason’s College of Education and Human Development offers a variety of degree programs involving science education. Here are links to the initial teacher licensure programs:

- **Initial License** with Masters in Elementary Education
  [http://gse.gmu.edu/programs/elementaryed/](http://gse.gmu.edu/programs/elementaryed/)
- **Initial License** or Masters in Secondary Education
  Earth science, biology, chemistry, or physics
  [http://gse.gmu.edu/programs/secondaryed/](http://gse.gmu.edu/programs/secondaryed/)

**Program Information on the Web**

**For Experienced Science Teachers**

Mason’s College of Education and Human Development offers a variety of degree programs for experienced teachers to receive advance degrees in science education. Here are links to the advanced degree programs:

- **Master** in Advanced Studies in Teaching and Learning Science
  [http://gse.gmu.edu/programs/astl/](http://gse.gmu.edu/programs/astl/)
- **Doctorate** in Science Education Leadership

**Center for Restructuring Education in Science and Technology**

The *Center for Restructuring Education in Science and Technology* (CREST) at *George Mason University*, focuses on providing quality science, mathematics, and technology education from early childhood through adulthood.

- Director: Donna R. Sterling
- Associate Director: Wendy M. Frazier
- Associate Director: Len Annetta

For information check online at: [http://cehd.gmu.edu/crest/](http://cehd.gmu.edu/crest/)

To subscribe to this enewsletter, email wfrazier@gmu.edu with “subscribe Science Education News” in the subject line.

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