Recently, George Mason University received $28.5 million U.S. Department of Education grant to spearhead statewide STEM-focused initiative. The Virginia Initiative for Science Teaching and Achievement (VISTA) is a partnership among 47 school districts, six universities, and the Virginia Department of Education to build an infrastructure 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.

The following are the primary focus areas:

- **Elementary** - Upper elementary (grades 4-6) teachers experience scientific, problem-based learning and student-centered inquiry as they work in teams to conduct inquiry-based science for children.

- **Secondary** - 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.

- **Leadership** - VISTA builds state infrastructure for leadership and support needed to extend quality inquiry-based science teaching to limited-English proficient (LEP) students, rural students, and students with disabilities.

VISTA builds capacity at all levels of leaders from classroom teachers to school district supervisors/coordinators to higher education faculty. For more information about this exciting, statewide initiative, please visit the VISTA website (http://vista.gmu.edu).

**NEW!!! VISTA Project NEW!!!**

On November 18, 2010, the Virginia Board of Education adopted the revised Curriculum Framework for the 2010 Science Standards of Learning. The revised Curriculum Framework reflects the changes needed for alignment with the 2010 Science Standards of Learning that were approved by the Board of Education on January 14, 2010. School divisions are expected to begin implementation of the revised standards by September 2011. The revised science standards and curriculum framework can be reviewed at: http://www.doe.virginia.gov/testing/sol/standards_docs/science/review.shtml

**PhD Science Education Leadership New Group Starting Fall 2011**

A new cohort of doctoral students in Science Education Leadership will be starting in fall 2011. The Science Education Leadership Program offers a unique PhD in Education for educators interested in Science Education Leadership K-12. The PhD prepares individuals for Leadership positions in science education. Such positions might include roles as state or national agency leaders, college or university faculty or researchers, school or central office leaders, curriculum and instructional materials developers, or professional organizations leaders.

Information can be found online at: http://gse.gmu.edu/programs/science/academics/

Applications are due February 1, 2011. For further information please contact Donna R. Sterling dsterlin@gmu.edu or 703 993-2022.

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

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. Funded by US Department of State, the theme of the project is “teacher leaders think systematically about their practice and learn from experience.” The project draws on Frazier’s expertise in STM teacher development and Fox’s wealth of expertise in foreign
language teacher development, international education, and advanced studies in teaching and learning.

Ten Russian science, technology, and mathematics (STM) teachers and ten English foreign language teachers received four weeks of professional development in Fall 2010 in the US. Their experience included field visits to partnering school, Thomas Jefferson High School for Science and Technology (TJHSST, FCPS) (lead teachers: Jim Jarvis and Betsy Sandstrom). Partner STM teachers from TJHSST included Jen Allard, Sandra Chhabra, Ann Drobnis, Phil Ero, Duncan Forbes, Mark Hannum, Hadan Kauffman, Dennis McFadden, Robin Taylor, and Barb Wood. Partner teachers for the EFL teachers included Genevieve Delfosse, Romano Iorga, Dale Kummer, Alex Pou-Scott, and Betsy Sandstrom. The ten STM teachers from Russia also visited TC Williams High School with Melissa Hamilton (Science Curriculum Specialist, ACPS).

Len Annetta and Lynne Schrum were guest speakers. Additional CEHD faculty participating in the creation and implementation of this grant are: Bev Shaklee, Amie Weinberg, Sheryl Cozart, Debra Sprague, and Margaret Hjalmanson. Mollianne Logerwell (PhD 2009) serves as program evaluator. The Russian partner for the project is Ms. Elena Novikova, School Director of Asia – Pacific School (http://www.atsh.ru/) in the city of Vladivostok in Primorsky Krai of Far East Russia.

American teachers will attend professional development in Far East Russia in May 2011. Follow-on includes on-going collaboration between the Russian teachers and their US partner teachers, as well as a teacher researcher workshop in Vladivostok. For more details, please see http://cehd.gmu.edu/usrtpd.

**CREST Science Camp 2010 “Forensic Crime Solvers”**

CREST offered a science camp for children entering grades five through seven in July 2010. “Forensic Crime Solvers” was directed by Dr. Mollianne Logerwell (Mason PhD awarded 2009) and instructors were graduate students in Mason’s Elementary Education Program. 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/ For further information, contact Wendy Frazier at wfrazier@gmu.edu

**CREST Welcomes Len Annetta**

This academic year Dr. Len Annetta joined the science education faculty at George Mason University. Len Annetta comes to us from North Carolina State University as an associate professor of Science Education. Dr. Annetta’s research has focused on distance learning and the effect of instructional technology on science learning of teachers and students in underserved populations. Understanding the popularity of online, multiuser video game play, Dr. Annetta has been awarded over $5 million in grants to support his work on distance learning and the use of Serious Educational Games as a vehicle for learning STEM content and STEM career awareness. In 2008, he was honored with three awards for his extension work teaching K-12 teachers and students’ video game design and creation. These awards were progressive from the College of Education Outstanding Extension Service Award, to the induction into the NC State University Academy of Outstanding Faculty Engaged in Extension to the Distinguished Alumni Engaged in Extension and Outreach award. Moreover, Dr. Annetta has twice been awarded the National Technology Leadership Initiative Fellowship in Science Education and Technology from the Association of Science Teacher Education and the Society for Information Technology and Teacher Education.

**Science SOL Institutes**

The K-12 Science SOL Institutes were a valuable venue for sharing the Revised Science Standards of Learning and focus on Inquiry-Based Instruction and the Nature of Science. The Virginia Science Education Leadership Association (VSELA), Virginia Association of Science Teachers (VAST), Virginia Department of Education (VDOE), and Longwood University partnered to develop and implement four Institutes in four regions of Virginia. VSELA (www.vsel.org) has posted the contents of the Institutes to provide teachers and district leaders with the content offered during the six hour Institute. This website provides the Powerpoint Presentations and links to the Nature of Science website designed for the Science SOL Institutes.

**Student Funding**

Liz Baynard received a 20-hour graduate research assistantship to assist with CREST research-related activities and to conduct ethnographic research on the new VISTA project.
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 the teacher in grade 4-6 that they are working with. This 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). For more information visit http://sunrise.ite.gmu.edu.

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 in-class support from coaches/mentors while teaching is taking place has a major positive impact on teaching and student learning. The National Science Foundation funded research suggests that coaches/mentors:
- Observe new science teachers teaching and provide constructive feedback,
- Assist in establishing classroom routines,
- Problem solve classroom management challenges,
- Share about the school’s culture,
- Participate in long and short-term planning with emphasis on instructional sequencing and pacing,
- Identify students’ common misconceptions and assist with planning to mitigate them,
- Provide lesson ideas, materials, and equipment or help locate equipment,
- Perform experiments with new science teachers prior to use with students,
- Model effective, safe instruction for large and small groups, and
- Focus on increasing student learning.

For new science teachers to become effective quickly, they need in-class guidance while they are learning to teach and help in planning. A copy of the report can be found at: http://cehd.gmu.edu/assets/docs/crest/SupportingNewScienceTeachers.pdf

Awards
- Len Annetta was selected as one of the nation’s "Nifty fifty" speakers at the annual USA Science and Engineering Festival for his work with Serious Educational Games.
- Donna R. Sterling was invited to the NSF conference Catalyzing Research in Science Education Policy June 8-10, 2010. http://www.4shared.com/document/pFf004Xh/CatR W.html
- Donna R. Sterling and Wendy M. Frazier received a Programs That Work Award from the Virginia Mathematics and Science Coalition for the New Science Teachers' Support Network (NSTSN) on May 11, 2010 in Richmond. NSTSN is a program for provisionally licensed middle and high school science teachers to help them succeed at teaching.
- Liz Baynard, Jason Calhoun, and Andrew Quon each received a $750 travel scholarships funded by ExxonMobil to travel to a national science education conference during the academic year 2010-2011.
- Wendy M. Frazier and Donna R. Sterling. The U.S. Department of Education reported that the Math Science Program Science Explorers is one of four MSP grants in the nation with rigorous evaluation. Science Explorers conducted at George Mason University is an elementary science teacher education program to increase student achievement in high needs elementary schools.
- Wendy M. Frazier was inducted on April 5, 2010, into Phi Beta Delta, Epsilon Chapter. PBD is an honor society that recognizes scholarly achievement among students, faculty, and staff who are involved in international activities.
- Harold Geller (Mason’s College of Science and CREST Affiliate) and Wendy M. Frazier (2010, 2011).


**PhD and Masters Degrees in Science Education for Experienced Teachers**

Mason offers an advanced masters degrees for experienced science teachers and a doctoral degree in science education. Graduates are prepared for careers as school or central office leaders, curriculum and instructional materials developers, state or national agency leaders, college or university faculty, college or university researchers, or professional organization leaders. If interested in these programs in science education for experienced teachers, please read about these programs online (URLs are listed for specific programs at the end of this newsletter) and contact Donna Sterling at dsterlin@gmu.edu for more information. Admission to the masters program is open each semester.

**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 [http://gse.gmu.edu/programs/secondaryed/](http://gse.gmu.edu/programs/secondaryed/)

**For Experienced 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:
- **Doctorate** in Science Education Leadership [http://gse.gmu.edu/programs/science/](http://gse.gmu.edu/programs/science/)

**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 wfrrazier@gmu.edu with “subscribe Science Education News” in the subject line.

To unsubscribe from this enewsletter, please email wfrrazier@gmu.edu with “unsubscribe Science Education News” in the subject line.