



The Center for Science, Mathematics, and Technology Education

A Center for STEM Education
in the College of Education at East Carolina University

Fall 2011 Newsletter

December 2011

DID YOU KNOW

- Cold water weighs more than hot water?
- October 10 is National Metric Day?
- Zero is an even number?
- ECU is the fastest growing University in NC for 6 straight years?
- The ECU College of Education leads the state in the production of new education professionals?

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Grant Happenings at the Center

The Center spent much of 2010-2011 pursuing external funding to support the mission of the Center. Grants funded and received in 2011 include a Tensor Foundation Grant, Bill Gates Foundation—Next Generation Learning Challenges, Department of Public Instruction Math and Science Partnership Award, Department of Public Instruction QUEST Award, and National Institutes of Health Science Education Partnership Award.

Area schools, teachers, and students will benefit from the grant pursuits of the Center. The \$2,076,000 in total funding will bring an array of programming to the area to enhance Science, Technology, Engineering, and Mathematics (STEM) Education. Our funds support programs such as STEM Girls, video game-based science learning, physics and mathematics education, and food as a teaching tool for mathematics and science education. Each project has a common goal of improving the delivery of STEM education in Eastern NC.

Grant funding is a priority of the Center, and we extend our deepest gratitude to our external funders for helping us bring innovative STEM programming to Eastern NC. We plan to create a *Grants Spotlight* section in each of our newsletters to showcase events, programs, and research data made possible from our various funding sources and continue to thank our funders.

Lending Library

The Lending Library is located on site at the Center. Our library has materials for your professional development as well as classroom activities and lessons. There are hundreds of math and science items just waiting to be checked out! You can check out our library online at <http://www.ecu.edu/cs-educ/csmte>

Enter your search terms in the field to search our catalog of resources. Visit us on-site to check out items for your classroom or professional development for free, or visit on-site for help with gathering materials. We look forward to working with you!

Great Materials for you to enjoy!!



The Center for Science, Mathematics, and Technology Education at East Carolina University

lending library

Science Olympiad Chewing on Nutrition Science

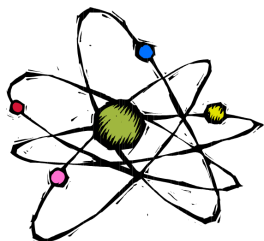


Science Olympiad is a K-12 science competition event that takes place throughout the State of North Carolina each year.

This year, a new event was added to the competition called – *Chew the Fat*. This competition emphasizes learning objectives in nutrition and digestion. Jason Painter, Director of North Carolina Science Olympiad comments “We are very excited to have this event added to our competition and appreciate East Carolina University’s Center for Science, Mathematics, and Technology Education’s involvement in developing the event. Understanding nutrition and digestion is important not only for meeting state science learning standards but also for children to better understand how science relates to their own health.”

Using guidelines provided by the Science Olympiad State organization, Melani W. Duffrin, Director of Special Projects for the Center for Science, Mathematics, and Technology Education and Registered Dietitian, developed the event for the State competition.

Mathematics and Science Partnership Grant - Physics is Essential



A review of the North Carolina Science Essential standards identified the topic occurring most frequently across grades K-8, and serves as a basis for understanding science concepts. Science education faculty at East Carolina University and elementary and middle school science consultants and teachers at the NC Department of Public Instruction were interviewed regarding science topics that pose the most difficulty for students and teachers. Through the review and interviews, “Forces and Motion” was the topic identified and selected for this grant. Forces and motion is a core concept in science, allowing for integration of many key concepts, principles and theories, and additional subject areas.

Dr. Mark Sprague and Ms. Tammy Lee are working with 25 middle school teachers from Beaufort, Craven and Wayne counties. Year 2 of the grant will expand to include grades 3-5 teachers; year 3 will include grades K-2 teachers. The Center helped facilitate the grant and Center Science staff coordinator, Nancy Evans, is assisting with the teacher workshops. Participating teachers will be involved in curriculum topic study, back mapping of concepts through atlas exploration, creating a Learning Progression topic model, and subsequently developing the lessons. Teachers will also explore the mathematics of measurement and graphing to assist in working with forces and motion. Teachers will apply and refine lessons within a summer science camp environment and implement the finalized lessons during the academic year. The one week science camp will be populated by students recruited from the participating counties.

STEM Magic Conference

A STEM Girls' conference for 100 8th grade girls from every middle school in Pitt County was held on October 14, 2011. This conference is a part of a Center grant titled MAGIC (Mathematics Advancement for Girls' Introduction to College) that was funded by the Mathematics Association of America Tensor Program. The grant's goal is to encourage girls to take advanced mathematics in high school. The event be-

gan with remarks from Chancellor Steve Ballard and Vice-Chancellor Deirdre Mageean. Our featured speaker was 9th grader Casey Sokolovic, a Winterville resident and nationally recognized environmental leader who started LAST, Love a Sea Turtle foundation. The girls were then divided into teams of 20 and rotated through five activities: S: Flower classification; T: Sand art for lean manufacturing techniques; E: Can crushing to

demonstrate materials testing; M: Mathematics and geometric art; and M (medicine): Preserved healthy and diseased organs. Lunch was at Todd Dining Hall and after an origami activity all received T-shirts, pirate hats and information from admissions. Interested girls will be able to attend our follow-up summer program. The MAGIC for STEM grant team is all-female and represents three colleges at ECU: Margaret Wirth, PI; Evelyn Brown, Mary Farwell, Susan Ganter, Cindy Putnam-Evans and Leslie Paglieri, co-PIs.



Summer Ventures in Science & Mathematics

Summer Ventures in Science and Mathematics at ECU had a great summer 2011 program with 71 rising high school juniors and seniors attending from all across North Carolina. The students lived on campus for four weeks and participated in cost-free math and science enrichment courses such as DNA Fingerprinting, Archaeology, Problem Solving, Physics: Energy Resources and Our World, Explorations in Engineering, Alternative Programming, and Medicine. The students also enjoyed a wide variety of residence life activities, sports activities, talent shows, and team-building activities.

Applications for the 2012 Summer Ventures program are available online at www.summerventures.org with a January 31, 2012 deadline.

Please contact us at millerche@ecu.edu for more information.

“Math and Science enrichment and on-campus living at no cost to you!”



Pictures to left:
STEM Girls
Conference 2011



The Center for Science, Mathematics, and
Technology Education at East Carolina University



Next Generation Learning Challenges

With funding from the Bill and Melinda Gates Foundation, The Center for Science, Mathematics, and Technology Education (CSMTE) at East Carolina University and the IntelliMedia Group at NC State University have partnered to release a game named Crystal Island in rural middle schools throughout eastern North Carolina.

Crystal Island is an intelligent game-based learning environment developed for middle grade students where students solve a science mystery as they learn about microbiology. To date, more than 1,000 students have used Crystal Island, and rigorous studies have demonstrated that it helps students achieve significant learning gains in both science and literacy.

For many students in rural eastern NC, the promise of new learning technologies cannot come too soon. The probability of completing high school for many young people is bleak, particularly for those from low-income families, and students of color. Nearly three out of every ten students in America today will not graduate high school. African-American, Hispanic, and low-income students face an even higher dropout rate of nearly 50 percent.

Crystal Island is designed to help address the challenges facing students and teachers in 8th grade schools throughout eastern North Carolina. The initiative brings together an active community of innovators and educators committed to driving next generation learning forward to dramatically improve college readiness.

In addition to Roger Conner and Margaret Wirth from our Center, Dr. Carol Brown from MSITE and Dr. Elizabeth Hodge from the Business and Information Technologies departments of the College of Education are working on the NGLC grant.

“We believe learning technologies and next generation models can produce transformative change...for both teachers and students.”
- Roger Conner

Follow NGLC on
Twitter
[@NextGenLC](https://twitter.com/NextGenLC)

TeachNet

The ECU Teacher Network is an online collaboration system for the STEM (Science, Technology, Engineering, and Mathematics) and STEM Based AP teachers from across the eastern region to collaborate on content, resources, pedagogy, and lesson plans, as well as to communicate professional development needs and questions

to the University. Using advanced social networking technology, file sharing, and professional learning communities this innovative system is designed to reduce duplication of effort and ensure that every teacher has access to the content and materials that they need to be successful.

Teacher and content specialists can register for the TechNet absolutely free online at teachnet.ecu.edu to begin to access the wealth of resources currently available.

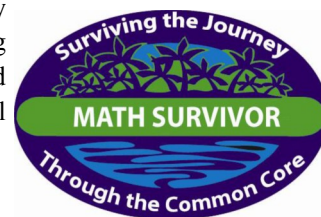


Quest VIII The Beaufort Mathematics Initiative for Grades 3-8

Quest VIII is a continuation of a previous Quest VII grant to strengthen math instruction for teachers in grades 3-8 and prepare them to be teacher-leaders in this region. Dr. Ron Preston and Dr. Heather Ries, in collaboration with the Center, guided the grant's teachers through three years of graduate study and professional development in mathematics and math education. Educators participated in a summer workshop as their

final teacher-leader product titled "Math Survivor: Surviving the Journey Through the Common Core." The workshop held in Washington, NC, on June 20-23, 2011, was organized by participants Lynn King, Katy Shafer, Robin Becker, Julie Evans, Melanie Simmons, Donna Woolard, Sheena Folkers, Shannon Cecil and Tracie Asby. The 25 Survivor workshop attendees from three neighboring counties earned CEUs and used

technology to engage students and covered core science and math topics. The interactive workshop received high praise from everyone involved. A similar workshop at the Gateway Center in Rocky Mount, NC this spring will be held for our mid-eastern NC regional teachers.



Meet the Newest Member of our Team



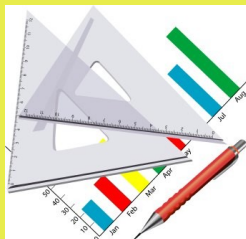
Mary Farwell is our new Director of University Engagement. Mary is a professor of Biology with an interest in science education and outreach. She has an ScB in Biology from Brown University and a PhD in Biochemistry from University of California-Berkeley. She has had a varied career, focusing on biochemistry research in the first 20 years and more recently on science education research. Mary is the new co-Director of the Region 1 Regional Science and Engineering Fair, covering 10 counties in eastern North Carolina. This year, the fair will be held on Feb. 25, 2012.

Mary's role at the Center is to make connections with all the science and technology departments on campus. She has visited most of the STEM departments and will complete the visits by the end of fall semester. One exciting outcome of the visits is our Experts Bureau, a list of scientists/engineers on line who will soon be available for talks in the public schools. Mary will head up a team of departmental liaisons who will help sustain ongoing communication between the Center and the various departments at ECU.

Liaison Committee Fall 2011

Biology	Dr. Grant Gardner and Dr. Heather Vance-Chalcraft
Chemistry	Dr. Anthony Kennedy
Computer Science	Dr. Sergiy Vilkomir
Engineering	Dr. Ricky Castles
Geography	Dr. Hong Bing Su and Dr. Thad Wasklewicz
Geological Sciences	Dr. Eric Horsman
Mathematics	Dr. Gail Ratcliff
Mathematics, Science and Instructional Technology Education	Dr. Ron Preston
Physics	Dr. Jim Joyce

GO PIRATES!!!



Mission Statement

This Center for STEM Education serves eastern North Carolina with a mission to:

1. Improve the quality and quantity of K-12 teachers of science and mathematics;
2. Provide strong experiences in science and mathematics for all K-16 students, while increasing the number of graduates pursuing careers in STEM disciplines;
3. Create a supportive environment for multidisciplinary research, evaluation and assessment while bridging the gap between educators and STEM professionals; and
4. Encourage community engagement that leads to increased university partnerships with school districts, business and industry

LETTER FROM THE INTERIM DIRECTOR

We are continuing to grow and evolve in spite of the current budget demands and personnel limitations impacting our university and nation. We are proud to employ new technology to support area educators through our resource Lending Library and TEACHnet, an on-line social network for math and science teachers. The Center continues to co-sponsor local mathematics and science competitions to promote student recruitment into STEM majors and careers at our university. Through grant participation and regional outreach efforts we strive to better serve our ECU faculty and community.

On behalf of everyone at the Center, I encourage you to join us in person and/or on-line through our professional development sessions, workshops, research efforts, grant proposals, resource library, and community events in support of STEM education.

- Margaret Wirth

Save the Date !!!



- **January 21, 2012 — NCSAS Science Fair**
- **January 28, 2012— Regional Science Olympiad Tournament.**
- **January 31, 2012— Deadline to apply for 2012 Summer Ventures Program.**
- **February 25, 2012 — Regional Science & Engineering Fair**
- **March 20, 2012 — Regional Mathematics Competition**
- **March 23-24—NC Science & Engineering Fair**
- **April 27-28 — Science Olympiad State Tournament**

Visit our center online at
www.ecu.edu/educ/csmte

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