



Region 2 Science Implementation Newsletter

In this Issue

How do you go from the actual science standards to lessons that effectively engage students in standards-based instruction? This issue's lead articles, "Organizing Effective Instruction" and "LOTS for GPS", focus on this concern. The implementation of a common instructional framework is an essential component of creating standards-based instruction. The Region 2 Science Team is on-call to support teachers in their classrooms with instructional frameworks or other best practice strategies such as LOTS (language of the standard).

Rerun or Prime Time Hit:

Organizing Instruction in the Standards-Based Classroom

A group of science teachers was overheard discussing the trials and tribulations of implementing the Georgia Performance Standards. One teacher offered his opinion that "lecture was still the most efficient means of teaching". Another teacher vowed, "there is no way I am going to do labs with that group I have after lunch." Encouraged by the direction the conversation was going, another teacher spoke up and said, "It is not my job to entertain a class of teenagers."

[Read more](#)

LOTS for GPS

A vital component of a standards-based classroom is the evidence that standards are accessible to all students. What does that mean? What does it look like? What strategies are utilized to insure the GPS are accessible to all students?

[Read more](#)

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Region Coordinator

Miriam Jordan, Ed.D.
mjordan@doe.k12.ga.us

Implementation Specialists:
Betty Ellis, Ed.D. NBCT

bellis@doe.k12.ga.us

Cindy Hillsman, Ed.S.
chillsma@doe.k12.ga.us

Anna Treohan, Ed.S.
atreohan@doe.k12.ga.us

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Science Teachers Become Campus Leaders

Not so long ago, on many campuses, the science department was held in low regard due to test scores. As science GHSGT scores have increased, so has the popularity of many of our science teachers. As science teachers rally hard to implement many of the changes encouraged by Science Mentors (previously known as Science Implementation Specialists), other departments want a piece of the action. Frequently, administrators report that their science department is their exemplar for Professional Learning Communities.

Other academic departments have begun to realize that their science departments are receiving information and access to the latest professional learning modules on best practice concepts as identified in the *High Impact Practice Implementation Rubric: Standards-Based Classrooms* document. They see science teachers collaborating, planning, and implementing new strategies on a daily basis. The excitement is contagious. Science teachers are experiencing fewer behavior problems and their students are talking science in their non-science classrooms. Best practices in the science classrooms are best practices in any classroom. Thus, our science teachers are becoming campus leaders as they share new ideas and strategies with other departments. We offer kudos to our science teachers as we continue to implement best practice strategies and work to raise our EOCT scores.

Making Connections Using Mind Mapping Tools

“Research has shown that concept maps and Vee diagrams help people learn how to learn,” (Hartman and Glasgow, 2002). Visuals or graphic representations help students make connections within the content and standards. Many schools in region two are beginning to use Thinking Maps to help facilitate these connections. “Concept maps help to empower students, reduce the need for rote learning (memorization without understanding), and help teachers to negotiate meaning with students and to design better instruction,” (Hartman and Glasgow, 2002).

Listed below are a few of the many **FREE** on-line tools that are available to use to create these beneficial visual representations in order to connect to GPS.

- Periodic Table of Visualization Tools, http://www.visual-literacy.org/periodic_table/periodic_table.html
- Google Spreadsheet Widgets, <http://www.google.com/google-d-s/tour1.html>
- IBM Many Eyes, <http://services.alphaworks.ibm.com/manyeyes/home>
- Text2Mindmap, <http://www.text2mindmap.com/>
- MindMeister, <http://www.mindmeister.com/>
- Best 4 Chart, <http://www.best4c.com/>
- Free Mind, http://freemind.sourceforge.net/wiki/index.php/Main_Page
- Mindomo, <http://www.mindomo.com/>
- Bubblus, <http://www.bubbl.us/>

- Teachnology http://www.teach-nology.com/web_tools/materials/timelines/
- Read-Write-Think <http://www.readwritethink.org/materials/timeline/>
- Interactive Timeline <http://www.learningtools.arts.ubc.ca/timeline/>
- Thinkport <http://timeline.thinkport.org/>
- Wordle word clouds, <http://wordle.net/>
- Create a Graph, <http://nces.ed.gov/nceskids/CreateAGraph/>

Hartman, H., & Glasgow, N. (2002). *Tips for the science teacher research based strategies to help students learn*. Thousand Oaks: Corwin Press.

Students Have a Ball with Chemistry

A group of Georgia College and State University (GC&SU) chemistry students and their professor, Dr. Catrena Lisse, celebrated National Chemistry Week by presenting a fun-filled chemistry program at a number of schools. This year's theme was "Having a Ball with Chemistry" and that is exactly what they did. The program was presented in Baldwin County at Oak Hill Middle School, Blandy Hills, Creekside, and Midway Elementary Schools, GNET, and Early College. The program was also presented at a number of other campuses including Johnson County Middle and High School, Jefferson County High School, Putnam County Middle and High School, and T.J. Elder Middle School in Washington County.

The GC&SU chemistry students engaged their audience in exciting and instructional demonstrations. They not only wowed the students with changing colors and loud noises, they connected the flashes and pops to the science concepts they were demonstrating. National Chemistry Week, an outreach program of the American Chemical Society (ACS), aims at enhancing the public's awareness of the contributions of chemistry in everyday lives and the nation's economy. The annual celebration is an opportunity for people of all ages to have fun learning about chemistry. In addition to Georgia College and State University, Mercer University, Fort Valley State University and The Middle Georgia Section of the American Chemical Society also take part in this annual week of chemistry events.

Johnson County students participate in chemistry demonstration



[November Announcements: Opportunities for the Classroom](#)

ExploraVision

Calling young scientists in grades K-12 to create and explore a vision of a future technology! Toshiba and NSTA invite students to share their creative thinking by competing in the ExploraVision Awards program. Up to \$240,000 in US Savings Bonds will be awarded to students this year. Laptop computers for schools and other prizes for students, teachers, and mentors will also be presented.

Now in its 17th year, ExploraVision encourages K-12 students of all interest, skill and ability levels to create and explore a vision of future technology by combining their imaginations with the tools of science. All inventions and innovations result from creative thinking and problem solving. That's what ExploraVision is all about.

[Click here to see the 2008 regional winners!](#) **This includes 2 from Georgia!**

Request your entry kit by clicking here:

<http://www.exploravision.org/request-entry-kit/index.php>

NASA Opportunity for 9-12 and Undergraduate Students: INSPIRE

The Interdisciplinary National Science Project Incorporating Research and Education Experience, or INSPIRE, is a multi-tiered project for students and their parents or legal guardians. Applications are due **December 31, 2008** for this project for U.S. students in grades 9-12 or in their first year of college.

Applications are now being accepted for INSPIRE's online community from students in the 9th to 12th grades through December 31. NASA's mission provides the content for the online community. Resources, activities and educational modules add relevancy to courses being taught in high school. Activities include participation in video teleconferences with NASA scientists, design competitions, and learning modules. The online community allows students to interact with other students with similar interests, to ask questions and to share knowledge, thus building a Community of Practice. The online community will also offer support for parents to help them better champion their student's goals. Once selected for the online community, students will be invited to compete for the unique grade appropriate summer experiences ranging from a 1 day VIP tour and workshops, a 2 week on-campus collegiate experience, and paid summer internships.

INSPIRE provides grade-appropriate NASA-related resources and experiences to encourage and reinforce students' aspirations to pursue science, technology, engineering and mathematics, or STEM, education and careers. The project also offers resources and information for parents to help them better champion their student's goals. INSPIRE provides participants a rich online community, as well as opportunities to compete to participate in NASA/STEM Experiences. For more information go to <http://www.nasa.gov/audience/forstudents/postsecondary/programs/INSPIRE Project.html>.

If you have questions about this opportunity, please e-mail your inquiries to INSPIRE Project Manager Steve Chance at steven.h.chance@nasa.gov.

2008-2009 Fundamental Aeronautics Student Competition

The Fundamental Aeronautics Program has announced its new competition for the academic year. Students from high school grades through graduate school are invited to research and design a small supersonic airliner that could enter service in the next decade. The competition has two divisions: High School and College/University. Teams or individuals may enter either contest, and the program encourages interdisciplinary partnerships.

High school participants must be enrolled in an accredited high school, secondary school or home school. For the high school division, a notice of intent is requested by **Dec. 15, 2008**. Final projects are due **March 15, 2009**.

Undergraduate and graduate participants must be enrolled in an accredited college or university. For the college and university division, a notice of intent is requested by **Jan. 15, 2009**. Final papers are due **April 30, 2009**.

International students may participate, but they are not eligible for certain prizes.

For more information about the contest, visit <http://aero.larc.nasa.gov/competitions.htm> <http://earthobservatory.nasa.gov/odysseyofthemind/>. Questions about the contest should be directed to Dr. Elizabeth Ward at Elizabeth.B.Ward@nasa.gov.

NASA

The Educational Materials section of NASA's Web site offers classroom activities, educator guides, posters and other types of resources that are available for use in the classroom. Materials are listed by type, grade level and subject. The following items are now available for downloading.

Adventures in Rocket Science Educator Guide -- Informal Education

This guide contains 25 activities designed for 4-H Clubs, Boys and Girls Clubs, Boy Scouts, Girl Scouts, after-school programs, and other informal education venues. Participants learn about the history and principles of rocketry and NASA's newest rockets -- Ares I and Ares V. While doing these hands-on activities, participants also learn about Hero Engines, parachutes and surface area, altitude tracking, and Newton's Laws Of Motion. Learners can also build four types of rockets and two types of egg drops.

http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Adventures_in_Rocket_Science.html

Environmental Control and Life Support Systems Water Filtration Challenge Educator Guide -- Grades 5-8

Earth provides the air we breathe, the water we drink, and other conditions that support life. Earth is a natural life support system. On the International Space Station, the Environmental Control and Life Support System provide these needs. The functions of an ECLSS include atmosphere revitalization; atmosphere control and supply; temperature and humidity control; water recovery and management; waste management; and fire detection and suppression. The activities in this guide focus on water recovery and management.

The challenge is to design and build a water filtration device using commonly available materials. To meet this challenge, students build, test and measure the performance of the filtration device, analyze the data collected, and use this information to work towards an improved filtration design.

[http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Water Filtration Challenge.html](http://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/Water_Filtration_Challenge.html)

High Schools Awarded Lemelson-MIT Invention Grants for Invention Projects

Nearly 94 percent of adults and 80 percent of teens in the United States believe the country needs to be more proficient in science, technology, engineering, and mathematics (STEM), according to the 2008 Lemelson-MIT Invention Index.¹ The Lemelson-MIT InvenTeam initiative addresses this critical issue; this year, 16 teams of high school students, teachers, and mentors will be given the opportunity to develop their STEM and problem-solving skills as they embark on an inventive journey. The InvenTeam initiative is designed to excite high school students about invention through hands-on learning, while encouraging an inventive culture in schools and communities long-term. Each InvenTeam will receive up to \$10,000 in grant funding to invent a practical solution to a real-world problem of their choosing. This year, the InvenTeams proposed inventions include an alternative energy refrigerator for northern climates, freeze protection system for citrus crops, and a sensing guide cane for the visually impaired.

The InvenTeam initiative ignites passion for science, technology, engineering, and math. Students will work through the various stages of design and development to create working prototypes. The 2008–2009 Lemelson-MIT InvenTeams come from public and private high schools in urban, suburban, and rural communities across the United States. A full list and information about applications for the 2009–2010 school year are now available [online](#).

Junior Engineering Technical Society Launches Teams Competition for 2008-2009

With the theme, "Behind the Scenes: Theme Parks," the Junior Engineering Technical Society (JETS), has launched its TEAMS competition for the 30th school year to high school students throughout the country. Once again this year, the one-day TEAMS competition will provide students in grades 9 through 12 with the opportunity to make real-world connections between math and science to engineering by solving actual engineering scenarios. This year, students will discover the engineering involved in designing, building, and running America's theme parks. In addition, American science, technology, engineering, and mathematics, or STEM companies have the opportunity to get involved by sponsoring local groups of between four and eight students for the TEAMS competitions which will be held at more than 70 colleges and universities nationwide.

More than 14,000 students participate in TEAMS each year. TEAMS competitions will take place nationally over a six-week period around National Engineers Week in February and March, 2009. The highest ranking team in the country will take top honors as the "Best Overall" and will be announced in early April 2009. The winning team will receive \$5,000 for their school. In addition, the Walt Disney World Resort will award the team a three-night stay at Walt Disney World. Like the other signature JETS programs, the purpose of TEAMS is to encourage more American students to pursue engineering by showing them just how engineering impacts everyday life and how engineers help solve social and community problems -- from building roads and bridges, to developing water purification systems for developing countries, to inventing alternative sources of energy to fuel our cars and keep our homes warm and cool. Triangle Coalition member, JETS, is a leading non-profit educational organization dedicated to promoting engineering and technology careers to America's youth. For more information, visit www.JETS.org.

November Announcements: Professional Learning Opportunities

Microgravity Workshop

Kennedy Space Center is sponsoring a Microgravity workshop for teachers at the NASA Educators Resource Center in the Museum of Aviation at Warner Robins. The participating teachers would receive a \$100 stipend and the following materials to build their own drop box apparatus to use in their classroom:

NASA Resources to make a microgravity drop box

- * X-10 Camera
- * Nuts and bolts
- * Plastic container

Educational CD
 NASA Education guides
 Posters and Lithographs

The workshop is scheduled for the morning of **Wednesday, Nov. 19** and is open to science and technology teachers, primarily middle and high school as it covers a lot of physics. We are trying to get at least 30 participants. We are tentatively looking at a 10am to 1pm schedule for the day.

Contact Jeff Rosen for more information: jeff.rosen@ceismc.gatech.edu

Research Experiences for Teachers (RET)

Florida State University is now offering two Research Experiences for Teachers (RET) programs in/near Tallahassee, FL. Both programs are funded by the National Science Foundation (NSF). These RETs are 6 week summer research experiences that match highly qualified Elementary, Middle and High School teachers with scientists at either the National High Magnetic Field Lab (NHMFL) or the FSU Coastal Marine Lab. The programs offer teachers a \$3600 stipend, travel and housing support to non-local teachers.

For details and online applications visit:

<http://www.ret.magnet.fsu.edu/education/ret/> or <http://bio.fsu.edu/osta/RET>

November/December Calendar

Date	Title	Sponsor	Location	For more information
12/3 & 12/10	Blogging and Podcasting for Educators	Heart of Georgia ETC	Eastman	HGRESAETC
12/9	SMARTBoard Interactive Whiteboard (Level II)	Heart of Georgia ETC	Eastman	HGRESAETC
TBD	Gifted Endorsement	Oconee RESA	TBA	Virginia Kasper
1/09 thru 12/09 (day of week TBA)	Reading Endorsement	Oconee RESA	TBA	Virginia Kasper

Illuminate Sessions for Science Teachers

The Department of Education will be offering content specific illuminate sessions during the upcoming year. Please plan to take advantage of this valuable resource.

<i>Month</i>	<i>Date</i>	<i>Time</i>	<i>Grade Level</i>	<i>Topic</i>
November	13	3:30PM	Eighth Grade	Teaching and learning with the Physical Science Frameworks
November	17	4:00PM	High School	Physics – Teaching the Georgia Stanards
December	4	4:00PM	High School	Fourth science – New Standards Information
January	8	3:30PM	K-2	Science resources for primary grades
January	15	3:30PM	Sixth Grade	Teaching and learning with the Earth Science Frameworks
January	15	4:00PM	High School	Biology – Teaching the Georgia Standards
February	12	3:30PM	Seventh Grade	Teaching and learning with the Life Science Frameworks
February	18	3:30PM	K-12	GSTA presentation of science information and updates
February	19	4:00PM	High School	Physical Science – Teaching the Georgia Standards
March	5	3:30PM	3-5	Science resources for upper elementary
March	12	3:30PM	Eighth Grade	Teaching and learning with the Physical Science Frameworks
March	19	4:00PM	High School	Physics –Teaching the Georgia Standards