

GSTA District II K-12 Science Conference

Saturday, October 3rd, 2009

North Georgia College & State University, Dahlonega, GA

Time	Room 107	Room 108	Room 211A	Room 211B	Room 212
8:30-9:00am	REGISTRATION/BREAKFAST in Dunlap Hall				
9:00-9:50am	Hazardous Waste 101: Lab Safety for Busy Teachers (Grades 6-12)	Photo Album of Inherited Traits (Grades 6-8)	Foldables and Science Instruction – Making it Fit (Grades K-5)	Virtual Labs in the Classroom (Grades 9-12)	Toys in Space! (Grades K-5)
10:00-10:50am	Chemical Management in Schools (Grades 6-12)	Come School With Us at the Georgia Aquarium (Grades K-12)	Visit with Vendors in Atrium (Grades K-12)	Inquiry Investigations (Grades 6-8)	Addressing Georgia Performance Standards through the “Big Ideas” in Nanotechnology (Grades 6-12)
11:00-11:50am	Introduction to Green Chemistry (Grades 6-12)	Here are the Ecosystems of Georgia (Grades K-5)	Foldables and Science Instruction – Making it Fit (Grades K-5)	Science in your Schoolyard: Equipment & Resources (Grades 6-8)	
12:00-12:50pm	LUNCH in Dining Hall – Steve Rich Keynote Speaker				
1:00-1:50pm	Weather Maps and More (Grades K-8)	Texas Instruments Technology in Your Classroom (Grades 6-12)	Discovering Science through Inquiry using the 5-Es (Grades K-8)	Erosion in a Day (Grades K-5)	Activities to help reinforce the AP Biology Curriculum (Grades 9-12)
2:00-2:25pm	Georgia 4-H Environmental Ed. (Grades K-12)	DNA is Elementary (Grades 1-4)	Increasing Your Science Scores with Standards-Based Lessons and Test Preparation using COACH Books (Grades 3-12)	Going Native: An Overview of Georgia’s Native Seasons & Native Waters (Grades K-8)	Biotechnology in the Classroom (Grades 9-12)
2:30-2:50pm	Welcome to the Wonderful World of Waves (Grades K-12)				
3:00-3:50pm		Magnetic Manipulatives You Make for Your Science Class (Grades K-12)	Science Fair for Beginners (Grades 6-12)		
4:00-4:45pm	CLOSING SESSION in Memorial Hall – Ron Anglin “Quite-A-Catch” Juggler				

GSTA DISTRICT II K-12 SCIENCE CONFERENCE
SATURDAY, OCTOBER 3RD, 2009
8:30AM-4:45PM
NORTH GEORGIA COLLEGE & STATE UNIVERSITY, DAHLONEGA, GA
TO REGISTER FOR THIS CONFERENCE, GO TO WWW.PIONEERRESA.ORG

SESSIONS INFORMATION:

TITLE: Hazardous Waste 101: Lab Safety for Busy Teachers

GRADE LEVEL: Middle & High (Grades 6-12)

CONTENT AREA: Interdisciplinary

LOCATION/TIME: 107/9:00-9:50am

The safety of students, teachers and staff is paramount to effective teaching. However, little training time is spent to acquaint teachers with chemical safety. Recent reorganization and funding cuts to state agencies have eliminated the outreach options previously available. This presentation fills in gaps left by universities and in-service training. The emphasis of this presentation is chemical safety in the laboratory or workshop setting, but safety in other areas of school operations is also addressed. Easy, no-preparation examples of risk reduction strategies are discussed, as is do-it-yourself chemical waste management. This talk is interdisciplinary and crosses student age groups. GPS addressed include: SCSH2, Lab Safety, and its various subsequent elements, including PS-HSES-9, Firefighter safety and CTAE-FS-7 Safety, Health and Environment in CTAE

TITLE: Chemical Management in Schools

GRADE LEVEL: Middle & High (Grades 6-12)

CONTENT AREA: Physical Science

LOCATION/TIME: 107/10:00-10:50am

The representatives of MKC Enterprises will share resources for chemical management, storage, and general lab safety. Many of the resources that they will share are available for free on the MKC Enterprises web page.

TITLE: Introduction to Green Chemistry

GRADE LEVEL: Middle & High (Grades 6-12)

CONTENT AREA: Physical Science

LOCATION/TIME: 107/11:00-11:50am

Presentation is an introduction to green chemistry. Presenter will discuss principles of Green Chemistry, Show resources to incorporate them in the classroom and provide a demonstration.

TITLE: Weather Maps and More

GRADE LEVEL: Middle School (Grades 6-8)

CONTENT AREA: Earth Science

LOCATION/TIME: 107/1:00-1:50pm

The basic techniques and interpretation skills needed to utilize Satellite images, Radar and Surface Charts will be presented in this class. Weather maps and data from websites like The National Weather Service, NASA and others will be downloaded for this hands-on session of analyzing real weather data. The step by step instructions will provide participants with practice drawing isobars, isotherms, identifying fronts, cloud features and more.

TITLE: Engaging students through the Georgia 4-H Environmental Education Program

GRADE LEVEL: All Grade Levels K-12

CONTENT AREA: Interdisciplinary

LOCATION/TIME: 107/2:00-2:25pm

This session will highlight our high quality educational field studies which connect students of all grade levels to nature while complementing multiple subject areas. Participants will learn about the successes of our programs and learn how to easily plan effective and meaningful trips at one of the five 4-H Centers across the state.

TITLE: Welcome to the Wonderful World of Waves

GRADE LEVEL: All Grade Levels K-12

CONTENT AREA: Physical Science

LOCATION/TIME: 107/2:30-2:50pm

This presentation offers demonstrations and activities that will provide concrete understanding for abstract terminology pertaining to waves, sound, light and optics. Demonstrations will be delivered showing interactions of mechanical and electromagnetic waves. Participants will actively participate in many of the activities. Demonstrations include interference of sound (beats and reflections or reverberations) and light (Moire patterns). Standing waves will be demonstrated—the sound wave pipe, string waves and slinkie activities. Participants will construct an apparatus that demonstrates forced vibrations and join in on an activity that involves the sense of sound. Color addition and color subtraction will be demonstrated with real life applications. The Doppler Effect, reflection, refraction, diffraction, resonance, real and virtual images are among the many abstract terms that have concrete hands-on applications. A booklet containing laboratory procedures and scientific explanations for most demonstrations will be distributed to each participant. These activities and demonstrations are adaptable and very cost effective. This presentation will address GPS: SPS9: Investigate the properties of waves and SP4: Analyze the properties and applications of waves. Many activities are appropriate for elementary and middle school levels addressing S1P1, S4P1, S4P2, and S8P4.

TITLE: Come School With Us at the Georgia Aquarium

GRADE LEVEL: All Grade Levels K-12

CONTENT AREA: General Science

LOCATION/TIME: 108/10:00-10:50am

From the world's largest fish, the whale shark to our interactive exhibits, it is our aim at the Georgia Aquarium to make the education experience an extension of the classroom. We have written learning objectives for all our programs that are aligned with the Georgia Performance Standards (GPS) at each grade level. Each of our education programs includes behind-the-scenes experiences as well as portions of the main Aquarium. Students not only view the animals in their exhibits, but discover the world behind the scenes: husbandry staff attending

to the animals, filtration systems and exhibit maintenance. Our goal is to provide your students with a memorable experience that inspires future environmental stewardship. But the fun is not just for the students! Teachers can immerse themselves in learning and gain invaluable content through hands-on experiences too. Our professional development opportunities are designed for teachers to experience firsthand some of the ecosystems found across the world and in our own backyard. This presentation will give an overview of the current school program options, professional development opportunities offered, and resources available to support teachers and students via our website. Biofacts, program activities and video feed will support this presentation.

TITLE: Here are the Ecosystems of GA

GRADE LEVEL: Elementary (K-5)

CONTENT AREA: Life Science

LOCATION/TIME: 108/11:00-11:50am

S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat. This is an interdisciplinary method of learning about the ecosystems of Georgia that has been done at Gainesville Exploration Academy for several years. After studying Georgia as a whole, pairs of students concentrated on an ecosystem that interested them. Using the book "Here is the Southwestern Desert" by Madeleine Dunphy as a pattern, students wrote a book about that region. They chose typical plants and animals and decided how they interact with each other. A recently completed book reads in part: Here is the Okefenokee Swamp of Georgia, Here is the water, brown and smelly that flows through the Okefenokee Swamp of Georgia. Here is the alligator, long and green, that swims in the water, brown and smelly that flows through the Okefenokee Swamp of Georgia. Etc. Stories were typed, cut and pasted. Illustrations were chosen from coloring books or the Internet. Students researched the organism to make sure that it was colored accurately. Final copies of the book were put in the library for others to read. Teachers will be given lesson plans, sample pages and an extensive list of resources to use to create books in their own class. Some materials will be given out as door prizes.

TITLE: Texas Instruments Technology in Your Classroom

GRADE LEVEL: 6-12

CONTENT AREA: General Science

LOCATION/TIME: 108/1:00-2:15pm

Come see the latest from Texas Instruments including ideas on how to integrate math and science using the multiple representations provided by technology. Multiple representations allow students to truly understand science concepts through links between data collection and graphical representations. Handouts and door prizes!

TITLE: DNA is Elementary

GRADE LEVEL: Grade Levels 1-4

CONTENT AREA: Life Science

LOCATION/TIME: 108/2:00-2:50pm

In 2008, the National Institutes of Health awarded Georgia State University's Bio-Bus Program a Science Education Partnership Award (SEPA) — a three-year grant to help educate Georgia's K-12 students about DNA and genetic principles.

The project's goal is to introduce the concept of DNA as a language. The "alphabet" of the genetic language is not commonly taught until high school and beyond. Younger children often acquire languages much more readily than older children and adolescents. Therefore, introducing DNA to younger students will help K-12 students become fluent in the language of DNA. The DNA is Elementary teaching module presently consists of four weekly visits during which students are actively engaged in various activities involving DNA concepts.

TITLE: Magnetic Manipulatives You Make for Your Science Class

GRADE LEVEL: All Grade Levels K-12 CONTENT AREA: Life Science

LOCATION/TIME: 108/3:00-3:50pm

This presentation will show teachers for all content areas of science how to make manipulatives that can be used on their white boards for acceleration, review, comprehension, etc. This is an economically stressful time for school systems to provide instructional tools for teachers to use in their classroom. I will show teachers how I use "homemade" visuals that stick to my white dry-erase board using magnets. (note: will not work on a "smart board") Nothing fancy, but usable every year as I go through each of my standards for 7th grade life science. These can be adapted to any content area. I will provide attendees with some materials so they can produce their own sample of a manipulative they can take to their classroom. The most useful set I have created addresses GPS S7L2.b - relating cell structures to cell functions. These "goodies" stay somewhere on my board throughout the year. As students learn the standard, they beg to come to the board to show what they know.

TITLE: Foldables and Science Instruction - Making it Fit

GRADE LEVEL: Elementary (K-5) CONTENT AREA: Interdisciplinary

LOCATION/TIME: 211A/9:00-9:50am and 11:00-11:50am

In this exciting session, a Level 2 Certified Trainer from Dinah Zike's Academy, will show you how you can integrate science, teach science and better instruct science into your already hectic day. You will see first-hand the power and potential of three-dimensional interactive graphic organizers, dynamic and efficient classroom organization and effective teaching practices across age-grade levels and content areas. Research grounding, implementation for a variety of learners, as well as practicality is built in.

TITLE: Discovering Science Through Inquiry Using the 5-Es

GRADE LEVEL: K-8 CONTENT AREA: General Science

LOCATION/TIME: 211A/1:00-1:50pm

Participants will use the 5 Es to encourage investigation by building background knowledge ENGAGE, participate in a hands-on science activity EXPLORE, understand key science concepts using graphic organizers and

vocabulary-development activities EXPLAIN, extend their learning through Inquiry based questions, discussion, and writing ELABORATE, and monitor progress and self assess using science journals and assessments EVALUATE.

TITLE: Increasing Your Science Scores by Integrating Standards-Based Lessons & Test Preparation using COACH books

GRADE LEVEL: 3-12 CONTENT AREA: General Science

LOCATION/TIME: 211A/2:00-2:50pm

Teach the students, not the test. We hear that statement but how do we do that and still see student success on the CRCT? This workshop will offer strategies for science instruction, differentiated activities, and ideas for re-teaching, review and mastery of state science standards.

Student accountability using Interactive Science Journals and key content vocabulary activities will be presented. Ways to review and integrate the standards during the year and management tools to successfully get students involved in hands-on, minds-on science will be a focus. This interactive workshop will have participants networking ideas, leaving with valuable materials, and taking activities back to classes to use immediately.

TITLE: Science Fairs for Beginners: How to run a science fair and stay human.

GRADE LEVEL: Middle & High (Grades 6-12) CONTENT AREA: General Science

LOCATION/TIME: 211A/3:00-3:50pm

This presentation has been prepared to offer help to those just beginning the experience of participating in science fairs. Helpful information, hints, and practices for teachers, sponsors, students and parents will be discussed. Copies of the official Georgia Science & Engineering rulebook will be distributed as well as ideas from our web site at www.uga.edu/oasp. During the presentation we will look at: Suggestions for picking a topic. How to do research? What is a hypothesis? What is a project plan? Now that you have done the experiment, what? Writing the Abstract. Practicing for judging. Summary with question.

TITLE: Virtual Labs in the Classroom

GRADE LEVEL: High School (Grades 9-12) CONTENT AREA: Life Science

LOCATION/TIME: 211B/9:00-9:50am

Virtual Labs make AP Biology exciting. Standards based interactive labs provide a comprehensive curriculum. Most effectively used as a pre and post tool along with your AP Biology kits. Your students can perform realistic lab investigations learn from animated multimedia tutorials assess their comprehension and prepare for exams. Includes: tutorials virtual labs assessments and teacher resources.

TITLE: Inquiry Investigations

GRADE LEVEL: Middle School (Grades 6-8)

CONTENT AREA: Interdisciplinary

LOCATION/TIME: 211B/10:00-10:50am

With Frey' Scientifics new Inquiry Investigations, students in Grades 6-9 can learn about their world through both hands-on activities and interactive computer simulations. Students will enjoy engaging classroom laboratory investigations. Then, with our innovative virtual labs, they manipulate variables to test hypotheses on their virtual workbench and record and analyze data with an electronic notebook. Inquiry Investigations includes Physical Science Series I and Series II, Cellular World, Kingdoms of Life, Human Biology and Health Issues, Biotechnology Applications, Biotechnology Techniques, Earth Resources, Environmental Issues and Solutions, Forensic Science, Chemistry-A closer look at matter. Inquiry Investigations -Cover all standards grades 6-9. Correlation is available on www.freyscientific.com

TITLE: Science in your schoolyard: Equipment and resources

GRADE LEVEL: Middle & High (Grades 6-12)

CONTENT AREA: Earth Science

LOCATION/TIME: 211B/11:00-11:50am

Coweeta Hydrologic Lab is a U.S. Forest Service Research Station that was established in 1934 to investigate different forest management activities on water quality and quantity. Today Coweeta Hydrologic Lab has expanded its mission and partners with colleges and universities through the University of Georgia's LTER (Long Term Ecological Research) Program. In addition, local school children are conducting their own research through the Coweeta LTER Schoolyard Program. The Coweeta LTER Schoolyard Program is providing much needed equipment to schools in Georgia and North Carolina. These "Resource Boxes" contain supplies needed to complete hands-on activities that will help teach the content of specific science strands of the GPS. These boxes are being made available for free to teachers, who attend this workshop, for a period of up to three weeks. Currently, we have boxes on hydrology, geology, soils and a projecting microscope that can be used with an LCD projector. Habits of Mind and Nature of Science Strands will be addressed as well as S6E3-Students will recognize the significant role of water in earth processes. S6E5-Students will investigate the scientific view of how the earth's surface is formed.

TITLE: Erosion in a day: A hands-on activity to explore the effects of erosion on terrestrial landscapes

GRADE LEVEL: Elementary (K-5)

CONTENT AREA: Interdisciplinary

LOCATION/TIME: 211B/1:00-1:50pm

An old adage states: "Tell me and I forget, show me and I remember, involve me and I understand." In this presentation we will demonstrate an inquiry-based lab that can be used to show students the effects of erosion on the land. This is an interdisciplinary lab intended for third graders, which ties together Science GPS S3E1 element d and Social Studies GPS SS3G1 element c, which focuses on how historical figures have adapted to their environment and influenced their environment. There are numerous historical and current examples of erosion here in the state of Georgia, including the "Little Grand Canyon" related to poor farming practices in the 1800s and our modern problems with erosion and sedimentation due to suburban development. Through this

activity students will gain an understanding of the process of erosion and will discover which landscape elements help prevent erosion.

TITLE: Going Native: An Overview of Georgia's Native Seasons and Native Waters

GRADE LEVEL: Elementary & Middle (Grades K-8)

CONTENT AREA: Interdisciplinary

LOCATION/TIME: 211B/2:00-3:50pm

Georgia is an amazing state. Not only is it the largest east of the Mississippi River, but it also has five geographic regions that provide unique habitats for a variety of flora and fauna. Did you know that Georgia has 88 endemic species and that our state ranks sixth in biodiversity? When you study the natural world you discover that life has few definite beginnings and endings, but rather passes through stages that are part of a continuing cycle. In this interactive session you will explore the changes that occur in the flora and fauna throughout the Georgia seasons, as well as an overview of a few of the amazing habitats that many species call home. S1L1. Students will investigate the characteristics and basic needs of plants and animals. S2L1. Students will investigate the life cycles of different living organisms S3L2. Students will recognize the effects of pollution and humans on the environment S3L1. Students will investigate the habitats of different organisms and the dependence of organisms on their habitat S4L2. Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation), and external features (camouflage and protection). S4L1. Students will describe the roles of organisms and the flow of energy within an ecosystem. S5L1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification. S5E1. Students will identify surface features of the Earth caused by constructive and destructive processes. S7L1. Students will investigate the diversity of living organisms and how they can be compared scientifically. S7L4. Students will examine the dependence of organisms on one another and their environments.

TITLE: Toys in Space!

GRADE LEVEL: Elementary (K-5)

CONTENT AREA: Physical Science

LOCATION/TIME: 212/9:00-9:50am

Teachers will participate in hands on activities to replicate experiments conducted by astronauts aboard the space shuttle. Teachers will build at least 2 of these toys to use in their own classroom. Teachers will predict how the toys will react in space and then view a DVD of astronauts conducting the experiments. Teachers will also be given information about the Honeywell Educators @ Space Academy program that I participated in this past summer at Space Camp in Huntsville, AL. There is an application process and the program is free to educators, with Honeywell providing the funding. A flyer with information about the scholarship and deadline will be distributed to those interested. The main focus of the session will not be on Honeywell, it will be on the toys in space. SKP2 S1CS6 S1P2 S2CS6 S2P3a S3CS7 S3P2 S4CS7 S4P3c S4P3d S5CS7

TITLE: Addressing Georgia Performance Standards through the "Big Ideas" in Nanotechnology

GRADE LEVEL: Middle & High (Grades 6-12)

CONTENT AREA: Physical Science

LOCATION/TIME: 212/10:00-11:50am

The National Nanotechnology Infrastructure Network (NNIN) is a National Science Foundation sponsored partnership of fourteen universities that provide state-of-the-art facilities to conduct research in nanotechnology. One goal of the NNIN's Education and Outreach Office (located at Georgia Institute of Technology) is to be a teaching resource in nanotechnology for people of all ages and educational backgrounds (http://www.nnin.org/nnin_edu.htm). The primary focus of the workshop will be to allow participants to learn how the "Big Ideas" in nanotechnology can fit into Georgia Performance Standards in their classrooms. The workshop will present hands-on instructional units that have been developed by teachers, NNIN education coordinators and other organizations working in the area of nanotechnology. Participants will perform the units guided by NNIN staff and connections to Georgia Performance Standards as well as National Science Education Standards will be shown. Participants will receive teacher and student guides to units and information on where to obtain additional nanotechnology lessons for their classrooms.

TITLE: Activities to help reinforce the AP Biology curriculum.

GRADE LEVEL: High School (Grades 9-12)

CONTENT AREA: General Science

LOCATION/TIME: 212/1:00-1:50pm

I have taught Ap Biology for 5 years. I have attended many science workshops but the workshops don't include reinforcement for AP Biology. In this presentation I would like to share many activities that I have found very useful in teaching the AP Biology curriculum. Ap Biolgy can be very dry but with these activities the students are allowed to use hands on activities incorporated with the usual lecture to grasp the concept.

TITLE: Biotechnology in the classroom

GRADE LEVEL: High School (Grades 9-12)

CONTENT AREA: Life Science

LOCATION/TIME: 212/2:00-3:50pm

I would like to have a hands on workshop where the teachers have an opportunity to do a pipetting exercise. This exercise is the first step in teaching Biotechnology in the classroom. The lab will be proceeded by information on what biotechnology is and then followed by what is going on in biotech education in Georgia. Teachers will then learn about our equipment loan program which provides access to free lab equipment and supplies so that they/teachers can do biotechnology labs in their classrooms.

CLOSING SESSION: Ron Anglin "Quite-A-Catch" Juggler

GRADE LEVEL: All Grade Levels K-12

CONTENT AREA: Physical Science

LOCATION/TIME: Memorial Hall/4:00-4:45pm

His shows & workshops teach science, geography, character traits or the summer reading theme. Lessons are illustrated by ball juggling and bouncing, club juggling, box manipulation, plate-spinning, Chinese yo-yos, rhythm-sticks, dice stacking, Shaker cups, a balance board, a unicycle, and the Japanese kendama.