



# Sustainability



Photo: Fort Myers Beach

**Holiday Inn, Commerce Drive**  
**Fort Myers, Florida**  
**November 4-6, 2010**



## SSMA 2010 Ft. Myers Convention Welcome

Welcome to our 109<sup>th</sup> Annual Convention of the School Science and Mathematics Association (SSMA). How many conferences have you attended that are in their 109<sup>th</sup> year?

There is an old French saying, “That which is not moving forward is moving backwards.” SSMA is moving forward! Since last we met:

- As of January, Wiley-Blackwell now produces and publishes our journal, *School Science and Mathematics (SSM)*.
- In addition, Wiley-Blackwell has made electronic archive copies of all articles of the *SSM* – back to 1901. These are available to SSMA members, at no cost, by logging into the SSMA web site.
- *School Science and Mathematics* is planning an upcoming special issue on Science, Technology, Engineering, and Mathematics (STEM) Education. Manuscripts need to be submitted by January 31, 2011 through the Scholar One website: <http://mc.manuscriptcentral.com/ssm>.
- Gil Naizer replaced Valeria Amburgey as Editor of the *Math-Science Connector*, SSMA’s newsletter.
- We currently are interviewing candidates to become our next *SSM* Editor, to replace Gerald Kulm when his term ends in July, 2011.
- Juliana Utley, University of Oklahoma, is our new SSMA Co-Executive Director, replacing Sandi Cooper.
- Convention registration and membership renewals are now available on-line.
- The SSMA website <http://www.ssma.org> was revised and re-launched this summer.
- And last – Don Balk takes over as the new SSMA President during this meeting!

We are an intimate, nurturing professional association comprised of a mixture of researchers and practitioners, with 400 members from 5 continents (North America, Europe, Asia, Africa, and Australia). SSMA is an inclusive professional community to unify researchers and educators to promote research, scholarship, and practice for the improvement and integration of school science and mathematics.

*School Science and Mathematics (SSM)*, the official journal of the SSMA, has been in continuous publication since its founding, also in 1901. The *SSM* is an international journal, published monthly, October through May, emphasizing research on issues, concerns, and lessons within and between the disciplines of science and mathematics in the classroom. Over 1,000 domestic and international libraries and universities subscribe to our journal.

We ask that you show professional courtesy to our presenters by attending sessions, muting phones, and always being supportive. For the past 108 years, many of the most distinguished mathematics and science educators gave their first papers at a SSMA Convention.

Please enjoy the learning experience of SSMA. We are glad that you are here with us.

Alan Zollman, SSMA President



## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

## Welcome from the Whitaker Center for STEM Education



### Whitaker Center

for STEM Education

SCIENCE • TECHNOLOGY • ENGINEERING • MATHEMATICS

The Whitaker Center for STEM Education at Florida Gulf Coast University welcomes you to Fort Myers. We strongly support SSMA's commitment to quality STEM education.

The Whitaker Center is a community of scholars dedicated to innovation in science and mathematics teaching and learning. Our work supports FGCU faculty developing innovative inquiry-based STEM education. We provide real-world experience and funding to help college students develop STEM career skills. Teacher professional development and summer research opportunities for students in grades 7-12 help promising students prepare for college.

We can all agree that encouraging science and mathematics education is an ideal way to ensure the brightest future.

Douglas Spencer, Director



# 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

## Special Thanks

### Organizational Sponsors of Outdoor Sessions

- Whitaker Center for STEM Education, Florida Gulf Coast University
- Lee County Mosquito Control District
- College of Education, Florida Gulf Coast University
- College of Arts and Sciences, Florida Gulf Coast University
- School of Engineering, Florida Gulf Coast University
- Corkscrew Regional Ecosystem Watershed (CREW)
- J.N. Ding Darling National Wildlife Refuge
- Six Mile Cypress Slough Preserve

### Individual Volunteers - Outdoor Sessions

- Neil Wilkinson (Coordinator), Florida Gulf Coast University
- Brenda Brooks, Educational Director, CREW
- Jerome Jackson, Florida Gulf Coast University
- John and Sue Miller, School District of Lee County
- Colloquium Students, Florida Gulf Coast University

### Volunteers - Friday Dinner

- Neil Wilkinson (Coordinator), Florida Gulf Coast University
- Brian Murphy, School District of Lee County
- Eric Jackson, School District of Lee County
- Susan Cooper, College of Education, Florida Gulf Coast University
- Colloquium Students, Florida Gulf Coast University

### Local Planning Committee

- Diane Schmidt, Chair, College of Education & Whitaker Center, Florida Gulf Coast University
- Susan Cooper, College of Education & Whitaker Center, Florida Gulf Coast University
- Win Everham, College of Arts & Sciences & Whitaker Center, Florida Gulf Coast University
- Mike Hynes, College of Education, University of Central Florida
- Jonas Rockhold, Graduate Assistant, College of Education, Florida Gulf Coast University
- Mike Savarese, College of Arts & Sciences & Whitaker Center, Florida Gulf Coast University
- Douglas Spencer, Whitaker Center, Florida Gulf Coast University
- Toni Sindler, School District of Lee County
- Neil Wilkinson, College of Arts & Sciences & Whitaker Center, Florida Gulf Coast University



# 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

## Convention Overview

### Thursday, November 4

8:00 AM - 4:00 PM	Registration
8:00 AM - 11:55 AM	Breakout Sessions
12:00 PM - 1:30 PM	Lunch
1:30 PM - 4:20 PM	Breakout Sessions
4:30 PM - 5:30 PM	SSMA Committee Meetings
5:30 PM - 7:30 PM	Reception

### Friday, November 5

8:00 AM - 4:00 PM	Registration
8:30 AM - 11:55 AM	Breakout Sessions
12:00 PM - 2:00 PM	Lunch
2:00 PM - 4:50 PM	Breakout Sessions
5:30 PM - 9:30 PM	Dinner and Boat Tour (Optional)

### Saturday, November 6

8:00 AM - 8:50 AM	Registration
9:00 AM - 1:00 PM	Special Saturday Sessions
1:00 PM - 1:50 PM	Lunch
2:00 PM - 10:00 PM	Fort Myers Beach Bus Transportation (Optional)





## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

### Pre-Conference Activities November 3, 2010

Wednesday

Convention Registration Desk

3:00 - 5:00PM



Photo: Gulf Coast Town Center Shopping Mall – Across from the Convention Hotel Plaza

Wednesday

Journal Editor Interviews  
Eagle's Nest A & B

9:00 AM - 4:00 PM

Wednesday

Board Meeting  
Eagle's Nest A & B

5:30 - 11:30 PM



## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

**Convention Registration Desk**

**7:30 AM - 5:00 PM**

**Continental Breakfast**

**7:00 AM – 8:30 AM**

# Thursday Morning Sessions

<b>Sessions 1 &amp; 2</b>		<b>Eagle's Nest A</b>	<b>8:00 - 8:50 AM</b>
<b>Session 1</b>	<b>Research Session</b>		<b>8:00 – 8:25 AM</b>
<b>Title:</b>	How Much Do Mathematics Skills Improve with Age? Findings from LTT NAEP		
<b>Presenter:</b>	Peter Kloosterman, Indiana University		
<b>Description:</b>	Each administration of the Long-Term Trend (LTT) Mathematics Assessments of NAEP from 1978 through 2004 included 14 items that were used at ages 9, 13, and 17 as well as 13 items used at both ages 9 and 13 and 19 items used at both ages 13 and 17. Using data from the secure LTT NAEP database, this study compared performance on those items over time to document the extent to which performance was better for older students. Although the items represent a limited set of skills, there was often noticeable improvement well after some of skills were taught.		
<b>Session 2</b>	<b>Research Session</b>		<b>8:25 – 8:50 AM</b>
<b>Title:</b>	A Phenomenological Investigation of 8th Graders' Fractional Number Sense		
<b>Presenter:</b>	Marnie Phipps, North Georgia College and State University		
<b>Description:</b>	This research session describes a phenomenological study with both quantitative and qualitative methodologies that includes 40 eighth-grade students and their predilection of fractions. Stratified groups of high, medium, and low fractional number sense show diversity in mathematical representations including verbal, written, manipulative aids, pictures, and real work scenarios. Additionally, they demonstrate various levels of flexibility with respect to different constructs of fractions such as density, part to whole knowledge, magnitude, equivalence, addition, and multiplication. Curricular implications include a greater emphasis on equivalence and magnitude and sustaining knowledge by developing students' prior knowledge.		

<b>Sessions 3 &amp; 4</b>		<b>Eagle's Nest B</b>	<b>8:00 - 8:50 AM</b>
<b>Session 3</b>		<b>Research Session</b>	<b>8:00 – 8:25 AM</b>
<b>Title:</b>	Relationships Between Logical Thinking and Kinematics Graph Interpretation Skills		
<b>Presenter:</b>	Behzat Bektasli, Hacettepe University		
<b>Description:</b>	<p>Student development is an important factor in understanding of graphical displays. The main purpose of this study is to describe and discuss the relationships between student logical thinking and kinematics graph interpretation skills of 12th grade physics students. Middle Grades Integrated Process Skill Test (MIPT) and Test of Understanding Graphs in Kinematics (TUG-K) were applied on 72 high school students and the results evaluated by performing a quantitative data analysis. Significant results were found between student logical thinking and kinematics graph interpretation skills.</p>		
<b>Session 4</b>		<b>Research Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	Elementary Teacher Content Knowledge and Inquiry Science		
<b>Presenters:</b>	Michael Scarlett, Montana State University-Billings Kenneth Miller, Montana State University-Billings		
<b>Description:</b>	<p>Our session will present the preliminary findings of our research on the relationship between science content knowledge and an elementary teacher's ability to teach with the methods of inquiry science.</p>		

<b>Sessions 5 &amp; 6</b>		<b>Royal Palm C</b>	<b>8:00 - 8:50 AM</b>
<b>Session 5</b>		<b>Research Session</b>	<b>8:00 – 8:25 AM</b>
<b>Title:</b>	The Environment and Service Learning		
<b>Presenters:</b>	Cheryl Frye, Triangular Solutions Shelly Munoz, Triangular Solutions		
<b>Description:</b>	<p>Through observation, inference and experimentation, students develop social and personal perspectives regarding environmental quality, renewable resources, risks and benefits of human induced hazards. Through a social action project, students acquire the skills necessary to become independent inquirers about the natural world. The social action process includes collecting scientific data, production of a multimedia visual and community service component. Students collaborate to determine an environmental issue that affects their immediate community. Research consists of interviews with community members, Internet searches, educational journals and the scientific process. Mathematics and writing are easily integrated into most projects.</p>		



<b>Session 6</b>		<b>Research Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	Rural Teachers' Perspectives on an Integrated Mathematics and Science Curriculum		
<b>Presenter:</b>	Georgia Cobbs, The University of Montana		
<b>Description:</b>	An integrated mathematics-science curriculum has been a part of many small, rural districts in an inner-mountain state for several years. In the Fall 2009, an on-line survey was conducted with these teachers to research their perspectives. Questions about mathematics and science skills and concepts were asked as well as benefits of the curriculum and barriers to implementation. Further, in-depth phone interviews with a selected few teachers were conducted to unveil teacher recommendations to instigate this curriculum into larger districts and other insights. Results of the survey and interviews will be shared as well as researcher conclusions.		

<b>Sessions 7 &amp; 8</b>		<b>Pelican A</b>	<b>8:00 - 8:50 AM</b>
<b>Session 7</b>		<b>Research Session</b>	<b>8:00 – 8:25 AM</b>
<b>Title:</b>	The Design and Development of Lesson Plans for K-12 Classrooms		
<b>Presenters:</b>	Melanie Shores, The University of Alabama at Birmingham Tommy Smith, The University of Alabama at Birmingham		
<b>Description:</b>	The purpose of this presentation will be to inform teachers and teacher educators of the opportunities to better prepare minorities and females for the future workforce and allow them to think critically and attain a competitive edge for the 21st century. The presentation will focus on Phase I results from the Girls Engaged in Math and Science (GEMS) Project.		
<b>Session 8</b>		<b>Research Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	Introducing the Use of Science Notebooks to Preservice Elementary Teachers		
<b>Presenters:</b>	Mary Sowder, Utah Valley University Elaine Tuft, Utah Valley University		
<b>Description:</b>	This session will present results of the first portion of a study that addresses how teacher educators can facilitate pre-service teachers' implementation of science notebooks in the elementary classroom.		

<b>Sessions 9 &amp; 10</b>		<b>Pelican B</b>	<b>8:00 - 8:50 AM</b>
<b>Session 9</b>		<b>Research Session</b>	<b>8:00 – 8:25 AM</b>
<b>Title:</b>	Embedding Mathematical Discourse in Shared Storybook Reading for Young Learners		
<b>Presenter:</b>	Lynn Columba, Lehigh University		
<b>Description:</b>	The purpose of this session is share research on (1) whether teachers can be trained to increase their use of mathematical discourse during shared storybook reading; (2) whether such an intervention would have a demonstrated effect on children’s use of mathematical discourse and their early mathematical knowledge; and (3) whether teachers generalize their use of math talk to routine activities outside of shared story time. Analysis of data from four preschool classrooms will be presented. Discussion will focus on the role that mathematical discourse, along with hands-on materials and shared reading, can play in supporting young learners’ conceptual development.		
<b>Session 10</b>		<b>Research Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	Sustaining Mathematical Discourse with Students: The Integrated Roles of Questioning and Listening		
<b>Presenter:</b>	Stacy Reeder, University of Oklahoma		
<b>Description:</b>	Research focused on the roles of both listening and questioning in mathematics classroom discourse will be presented. This study aimed to examine the work of one veteran middle school mathematics teacher in his efforts to develop and sustain an ongoing mathematical conversation as part of a problem centered learning classroom.		

<b>Sessions 11 &amp; 12</b>		<b>Osprey A</b>	<b>8:00 - 8:50 AM</b>
<b>Session 11</b>		<b>Research Session</b>	<b>8:00 – 8:28 AM</b>
<b>Title:</b>	Explaining Changes in Teachers' Beliefs & Practices		
<b>Presenter:</b>	Henry Neale, The University of North Carolina at Charlotte		
<b>Description:</b>	Following a review of the literature on teacher beliefs and practices and models of teacher change, a new model of teacher change, The Contextualized Interaction model, will be presented. This model represents the relationship between teacher beliefs and practices as a dynamic interaction which occurs only within the context of sociocultural influences. Findings from a study in which this model was used to explain changes in the beliefs and practices of three elementary teachers engaged in a professional development program will be presented. Implications for the design and implementation of professional development will also be discussed.		

<b>Session 12</b>		<b>Regular Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	The Personal Side of Science: Helping New Teachers Overcome their Fear of Teaching Science		
<b>Presenter:</b>	John Mascazine, Ohio Dominican University		
<b>Description:</b>	Novice teachers, especially early childhood teachers, often enter the teaching profession with phobias or fears of teaching science. By teaching and using examples of the personal stories of discovery and research, I've been able to help teacher candidates see science as a more interesting and human endeavor. This session will discuss some methods I've used, as well as, examples of the "personal side of science."		

<b>Sessions 13 &amp; 14</b>		<b>Osprey B</b>	<b>8:00 - 8:50 AM</b>
<b>Session 13</b>		<b>Research Session</b>	<b>8:00 – 8:25 AM</b>
<b>Title:</b>	K-9 Transition Initiative Pilot Program		
<b>Presenter:</b>	Bob Thomas, Eastern Kentucky University		
<b>Description:</b>	The EKU Math Education Team is working with elementary and middle grades teachers in the Corbin Independent School District. This Pilot Program initiative combines a comprehensive basic skills initiative centered on automaticity, numeracy and mathematics fluency and a comprehensive testing and remediation program. In this pilot program, teachers have been empowered to create grade level end of course skills tests to evaluate individual students for placement and remediation. This ongoing initiative [Year 2] has shown promising initial results with phase one [remediation schedules] being instituted. The Math Education Team has expanded the elementary and middle grades portions to other selected schools in the EKU service region. Thirty-five regional School districts are currently participating in the expansion of the original Pilot Program.		
<b>Session 14</b>		<b>Research Session</b>	<b>8:25 – 8:50 AM</b>
<b>Title:</b>	Sustaining Inquiry-Based Mathematics Instruction in a Preservice Program		
<b>Presenters:</b>	Mark Daniels, University of Texas at Austin Efraim Armendariz, University of Texas at Austin		
<b>Description:</b>	M375T: Discovery is offered by the Mathematics Department at the University of Texas at Austin. The course serves undergraduate Mathematics majors seeking secondary certification in the UTeach Program College of Natural Sciences. The distinguishing feature of the course is that instruction is inquiry-based. The instrument for evaluating the effectiveness of the course has been the University's Course-Instructor Survey. The CIS does not measure students' attitudes toward discovery methodology used in instruction. In Fall 2009, a Survey of Attitudes for purposes of sustainability was developed and administered to the class. Preliminary analysis of the responses is the subject of this presentation.		

<b>Session 15</b>		<b>Eagle's Nest A</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Teachers Now: Preparing More and Better Middle Grades Math and Science Teachers		
<b>Presenters:</b>	Jeremy Winters, Middle Tennessee State University Dovie Kimmins, Middle Tennessee State University		
<b>Description:</b>	With money from a congressionally directed grant, Middle Tennessee State University has implemented the Teachers Now Program which has utilized four key strategies to increase the quality and quantity of the grades 4-8 mathematics and science teachers it graduates. Strategies include recruiting students aggressively, rewarding personnel, revising program components and increasing collaboration among all stakeholders in teacher education.		

<b>Session 16</b>		<b>Eagle's Nest B</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Enhancing Curriculum Integration with Science, Mathematics, and Literature		
<b>Presenters:</b>	Sally Mayberry, Florida Gulf Coast University David Quinn, Florida Gulf Coast University		
<b>Description:</b>	Implementation of the Standards continues to be a priority in school systems across the country. The use of creative ideas to integrate teaching across the curriculum is an important tool in this implementation. This session was developed to introduce effective examples of children's literature with science and mathematics content topics. This presentation provides a problem-solving approach emphasizing real world connections and cooperative learning strategies. Samples will be presented, guidelines proposed, and roadblocks discussed. Handouts, including a current bibliography will be provided.		

<b>Session 17</b>		<b>Royal Palm C</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Creating Critical Connections in Mathematics and Science through Engineering via Guided Inquiry		
<b>Presenters:</b>	Timothy Laubach, University of Oklahoma Stacy Reeder, University of Oklahoma		
<b>Description:</b>	We will share our experiences in facilitating the pedagogy component of a Mathematics and Science Partnership (MSP) grant project. This project employed an innovative approach to integrating mathematics and science using the field of engineering. Forty-seven middle school mathematics and science teachers participated in a ten-day summer institute and in four follow-up sessions during the subsequent school year. The summer institute was structured into two components: engineering investigations in laboratories with engineers and pedagogy experiences in classrooms with mathematics and science educators. We also will highlight a few of the authentic, guided inquiry lessons implemented throughout the project.		

<b>Session 18</b>		<b>Pelican A</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Developing Conceptual Knowledge in Geometry and Measurement		
<b>Presenters:</b>	Bill Jasper, Sam Houston State University Andrea Foster, Sam Houston State University		
<b>Description:</b>	If teachers rely on memorization for students to learn geometry and measurement terms, students often forget these terms, and also don't really understand what they mean. Learning vocabulary follows logically from conceptual understanding, and students retain vocabulary for a longer period when the terms are learned in the context of geometry lessons. This session will show classroom-tested strategies for developing conceptual knowledge and vocabulary together, using Geometer's Sketchpad and mathematics manipulatives. Strategies and techniques discussed work especially well with English Language Learners and other struggling students.		

<b>Session 19</b>		<b>Pelican B</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Revisiting Rocky and Bullwinkle: Getting tenure, promotion, publishing, grantmanship, and happiness		
<b>Presenter:</b>	Alan Zollman, Northern Illinois University		
<b>Description:</b>	What can we learn about tenure and promotion from the cartoon episode "Bullwinkle Takes the Wheel or The Bum Steer"? This is an update of the SSMA 2008 workshop to mentor "young" professionals in writing for publication, budgeting time, getting a support group, and enjoying the vocation.		

<b>Session 20</b>		<b>Osprey B</b>	<b>9:00 - 9:50 AM</b>
<b>Title:</b>	Ciphering to the Rule of Three and the Evolution of Teaching Proportion		
<b>Presenters:</b>	Deana Deichert, University of Central Florida Mercedes Sotillo, University of Central Florida		
<b>Description:</b>	Abraham Lincoln described the extent of his own education when he said, "I could read, write, and cipher to the Rule of Three; but that was all." In this session, participants will discover what honest Abe meant by the Rule of Three and how this rule has changed throughout the history of American education. We will examine the replacement processes for solving proportions and their applications to mathematics and science education. Participants will engage in discussions about the pros and cons of using these alternative procedures in an era of education that emphasizes conceptual learning.		

<b>Session 21</b>	<b>Eagle's Nest A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Teaching Science and Mathematics Through Community and Culture: A Place-Based Model	
<b>Presenter:</b>	Donna F. Berlin, The Ohio State University/School of Teaching and Learning	
<b>Description:</b>	Science and mathematics are a part of student's personal life, community, and cultural heritage. Using a community and/or cultural context as the catalyst to design integrated science and mathematics experiences may make teaching and learning more accessible, relevant, and meaningful to individual students as well as groups of students. Aligned with science and mathematics curricular standards, examples of integrated science and mathematical experiences that were designed for use in Mexico will be described as place-based models that can be generalized to different areas of the world and diverse populations. Current and future research related to this model will be discussed.	

<b>Session 22</b>	<b>Eagle's Nest B</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Organizing and Conducting an Engineering Fair for 5th Graders	
<b>Presenters:</b>	John McBride, University of Texas-Pan American Martha Tevis, University of Texas-Pan American	
<b>Description:</b>	Presenters will provide a rationale for holding an Engineering Fair and provide a philosophical and pedagogical foundation for holding one, then present a model for organizing and conducting this kind of event. Presenters will engage session participants in an example of an engineering activity to model how they can use them with their students. A handout of engineering activities and resources of engineering activities for children will be provided.	

<b>Session 23</b>	<b>Royal Palm C</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Using Autobiographical Reflection to Understand Elementary Preservice Teachers' Experiences in Science	
<b>Presenters:</b>	Sarah Ramsey, University of North Carolina Charlotte Kate Popejoy, University of North Carolina, Charlotte	
<b>Description:</b>	Autobiography aids in the understanding of self. With this in mind, we asked our preservice elementary teachers to write science autobiographies to help them understand how their experiences with science affect their attitudes toward science, interest in science, and confidence in their ability to teach science. We will present an initial analysis of these students' stories revealing common experiences and their associated consequences related to science teaching and learning. It is important to consider these stories; they inform the primary discourse students bring to the university and influence their experiences in our classes.	



<b>Session 24</b>		<b>Pelican A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	One Lesson. Two Classes. Two Outcomes?		
<b>Presenters:</b>	Sarah Quebec Fuentes, Texas Christian University		
<b>Description:</b>	This presentation will document my experience teaching the same lesson to two different classes of pre-service teachers in an elementary mathematics methods course. The students were asked to find the quotients for a sequence of division-of-fraction problems without using an algorithm. Since the subsequent class discussions were based on the students' strategies, the two classes looked very different. After describing the various student approaches, the implications of conducting a lesson based on student-generated ideas on both the role of the teacher and the students' understanding will be discussed. Finally, the following question will be addressed: Were the two classes different?		

<b>Session 25</b>		<b>Pelican B</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	A Private School's Mathematics Curriculum: Pre-Kindergarten through Twelfth Grade		
<b>Presenters:</b>	Robert Nichols, Canterbury School Cynthia Baker, Canterbury School		
<b>Description:</b>	The pre-kindergarten through twelfth grade private school mathematics curriculum presented is based on a comparison between standards of the NCTM's Principles and Standards for School Mathematics, Singapore secondary mathematics standards, and Florida's Next Generation Sunshine State Standards. A standards-based curriculum not only contains content but includes cognitive psychology influencing how the standards are written. This curriculum presentation takes a topics-based curriculum and aligns the aforementioned standards into its existing courses from grades pre-kindergarten through twelve. For the purposes of this presentation, the standards have been restricted to just the content standards and does not include the process standards.		

<b>Session 26</b>		<b>Osprey A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Professional Development Based on Conceptual Change Model Alters School Culture		
<b>Presenter:</b>	Joseph Stepans, University of Wyoming		
<b>Description:</b>	This session will outline aspects of WyTRIAD and its impact on teachers, students, administrators, and school culture. WyTRIAD is a long-term, onsite, three way partnership between facilitator, teachers, and their administrator. It is researched based and includes an integrated core of professional development component, including: learning from and about learners, interviewing, implementing constructivist-based instruction, modeling, integrating disciplines, sharing and reflecting, and classroom inquiry. Teachers and administrators are challenged to examine their assumptions, their roles, and students' roles, create a rich and relevant learning environment, and keep track of what works with diverse students.		

<b>Session 27</b>		<b>Osprey B</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Engaging First Year Students by Fusing Composition and Ecology in an Experiential Model		
<b>Presenters:</b>	Linda Rowland, Florida Gulf Coast University Neil Wilkinson, Florida Gulf Coast University		
<b>Description:</b>	This presentation highlights a course pairing that serves as an Ecology-based experiential learning and writing model. With the goal of encouraging curiosity in students, Environmental Biology of Southwest Florida and Composition II are designed to work together to help students develop an awareness of local ecosystems and forge a sense of connection with the place they have chosen to get their education. Courses are scheduled together to provide time for outdoor field trips where students see the ecosystems they study in Environmental Biology and use those experiences as the basis of essays for Composition. The level of learning in each class is enhanced in the process and the experience is rewarding as students and instructors learn together. Course instructors will show attendees how to replicate this set of paired courses even during difficult budgetary times.		

<b>Sessions 28 &amp; 29</b>		<b>Eagle's Nest A</b>	<b>11:00 - 11:50 AM</b>
<b>Session 28</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Profile of a Science Fair Coach		
<b>Presenter:</b>	Julie Angle, Oklahoma State University		
<b>Description:</b>	Prior studies have demonstrated the positive academic influences that conducting scientific research and competing in science fair has on secondary students but little research exists on the characteristics and motivational factors of secondary science teachers who coach these students. This preliminary study identified characteristics, motivational factors, and beliefs of teachers who encourage students to seek a deeper level of scientific knowledge by conducting original research that ultimately leads to state, national, or international competitions such as State Science Fairs, the National Junior Science and Humanities Symposium, and the Intel International Science and Engineering Fair.		
<b>Session 29</b>		<b>Research Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	Science Teacher Attrition in High Minority Schools: Is it an Issue of Culture, Context or Pay?		
<b>Presenter:</b>	Caroline Vasquez, Texas A&M University		
<b>Description:</b>	Understanding the complex ways in which social and cultural contexts shape the Teacher Professional Continuum (TPC) have become a central concern in education. This is especially true in schools experiencing science teacher shortages and significant increases in minority student population. In the context of high Latino schools in Texas, this work presents a critical analysis of the perspectives and experiences of high school science teachers and administrators with respect to the TPC, science teaching, educational policy, school practices and life as a teacher. A new approach is outlined combining concepts from three separate fields of inquiry.		

<b>Sessions 30 &amp; 31</b>		<b>Eagle's Nest B</b>	<b>11:00 - 11:50 AM</b>
<b>Session 30</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Using Common Student Misconceptions in Algebra to Improve Algebra Preparation		
<b>Presenter:</b>	Rachael Welder, Hunter College, City University of New York		
<b>Description:</b>	<p>This presentation will bring awareness of widespread algebra misconceptions, and suggestions on how they can be avoided, to those who are teaching students the early mathematical concepts that they will build upon when learning formal algebra. Teachers must understand how the subtleties of the arithmetic content they teach can dramatically, and sometimes negatively, impact their students' ability to transition to algebra. I will provide an overview of research that identifies misconceptions and some practical applications for addressing them, in five content areas that are prerequisite for learning algebra: Integers, Computations/Bracket Usage, Equality, Operational Symbols, and Letter Usage.</p>		
<b>Session 31</b>		<b>Research Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	Impacting Teachers' Algebra Pedagogical Content Knowledge		
<b>Presenters:</b>	James Telese, University of Texas, Brownsville Debra Junk, University of Texas, Austin		
<b>Description:</b>	<p>The session describes a collaborative effort to improve teachers' algebra pedagogical content knowledge through the Texas Regional Collaboratives. The Collaboratives in this study consisted of 20 regions across Texas in which teachers attended mathematics professional development focused on fostering algebraic thinking. Teachers were administered the Math Knowledge for Teaching Algebra (MKT-A) from the University of Michigan, as pre-, posttests. Programs varied in their approach to the professional development activities. Results indicate that when programs focused directly on algebra pedagogical content knowledge rather than offering a "cafeteria-style" of related activities the teachers made greater gains in teacher pedagogical content knowledge.</p>		

<b>Session 32</b>		<b>Royal Palm C</b>	<b>11:00 - 11:50 AM</b>
<b>Session 32</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Mathematical Habit of Mind (MHM) in the Context of Preservice Teachers (PST)		
<b>Presenter:</b>	Richard Millman, Georgia Institute of Technology		
<b>Description:</b>	<p>MHM is a recommendation for future teachers in the CBMS volume, The Mathematical Education of Teachers, but presently there is no clear agreement of a rough definition. This session will present an analysis of MHM in the text for PST by Long/DeTemple/Millman. The results consist of analyzing the common threads in those statements marked MHM which will be discussed by the audience. This work builds on the article MHM for Preservice Teachers, SSM 109 (2009), p. 298-302 by Millman and Jacobbe, will be used as a platform for an understanding of MHM, and will be an aspect of educational sustainability.</p>		

<b>Sessions 33 &amp; 34</b>		<b>Pelican A</b>	<b>11:00 - 11:50 AM</b>
<b>Session 33</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	How In-service Chinese Elementary Mathematics Teachers Gain Knowledge from Professional Development		
<b>Presenter:</b>	Song An, Texas A&M University		
<b>Description:</b>	This research explored the experiences of teachers' professional development participation. Four Chinese math teachers were interviewed in a focus group, and the grounded theory method was used in the data analysis. This study from four Chinese mathematics teachers' view, presented the construction of different types of teacher professional development programs and how teachers interacted with other teachers in these programs. Also, how teachers gain different types of knowledge in different programs was noted.		
<b>Session 34</b>		<b>Research Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	Using Oral Storytelling to Enhance Culturally Responsive Mathematics Teaching and Pedagogy with Young Children		
<b>Presenter:</b>	Catherine Kelly, University of Colorado at Colorado Springs		
<b>Description:</b>	The oral storytelling methodology was implemented in this study since it is a naturalistic tool allowing all children opportunities to participate in developing, structuring, and solving a mathematical problem. The study involved children in a series of basic mathematical spatial orientation activities in the classroom followed by the implementation of the following oral storytelling premises: The story must be: 1) Seen through the eyes of children's real (relational) experiences; 2) presented orally through the lens of the story or word problem; 3) connected to ethnomathematics (connections between mathematics/culture); and, 4) situated in ways that are interesting, interactive, and relevant.		

<b>Sessions 35 &amp; 36</b>		<b>Pelican B</b>	<b>11:00 - 11:50 AM</b>
<b>Session 35</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Sustaining Student Engagement in an Online Course in Mathematics, Science and Technology		
<b>Presenter:</b>	Dolores Burton, New York Institute of Technology		
<b>Description:</b>	The session will share lessons learned in the evolution of an online graduate course for in-service and pre-service teachers. The course focuses on implementation of the NCTM standards, teaching mathematics to diverse populations including using brain based research, and the integration of mathematics and science and technology. Research-based instructional best practices in elearning including the addition of video were implemented to increase student engagement in the course content and discussion forums. The presentation will include data collected on student interaction and an analysis of student discourse.		

<b>Session 36</b>		<b>Regular Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	A Hands-On Approach to Learning Mathematics and Science: Evaluation of GEMS Lesson Plans		
<b>Presenters:</b>	Melanie Shores, The University of Alabama at Birmingham Tommy Smith, The University of Alabama at Birmingham		
<b>Description:</b>	The GEMS Implementation Workshop was designed with hopes that the participants would not only learn new skills in the areas of mathematics and science but ultimately begin to like mathematics and science and realize that they to are capable of completing higher-level mathematics and science courses in high school and beyond. For Phase III, GEMS Implementation Workshop, we targeted female students, K-12, from all races and all levels of economic status resulting in 89 girls, grades 1-12, participating in one mathematics and one science lesson taught by eight hand-selected GEMS teachers.		

<b>Sessions 37 &amp; 38</b>		<b>Osprey A</b>	<b>11:00 - 11:50 AM</b>
<b>Session 37</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Evaluation Results: High School Mathematics Dynamic Drawing and Computer Vision ITEST Program		
<b>Presenters:</b>	Bonnie Swan, University of Central Florida Jaime Godek, University of Central Florida Niels Da Vitoria Lobo, University of Central Florida Conrad Katzenmeyer, University of Central Florida		
<b>Description:</b>	The focus is to present evaluation findings from a 3-year NSF ITEST program centered on the idea of introducing dynamic drawing software, computer vision and imaging experience through high school mathematics. Pictures Represent Opportunities for Inspiration in Technology Program (PROFIT) was designed as a novel model for training teachers to use pictorial IT for transferring appealing modules into core curricula and for mentoring students through their pre-collegiate years.		
<b>Session 38</b>		<b>Research Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	Evaluating the Impact of Virtual Manipulatives on Teacher Quality		
<b>Presenters:</b>	Linda Zientek, Sam Houston State University Shirley Matteson, Texas Tech University Kathleen Mittag, University of Texas, San Antonio Sharon Taylor, Georgia Southern University		
<b>Description:</b>	Virtual manipulatives, by nature of their interactive visual representations, have the potential of providing students opportunities to construct mathematical knowledge while allowing them to be in control of their learning. In addition, virtual manipulatives may be beneficial in assisting teachers to develop content and pedagogical skills. This session illuminates middle school and secondary mathematics teachers' attitudes towards technology, specifically focusing on the implementation of virtual manipulatives (VM) in the mathematics classroom.		

<b>Sessions 39 &amp; 40</b>		<b>Osprey B</b>	<b>11:00 - 11:50 AM</b>
<b>Session 39</b>		<b>Research Session</b>	<b>11:00 – 11:25 AM</b>
<b>Title:</b>	Mathematics Teacher Differences: Teacher Quality and Preparation in an Alternative Certification Program		
<b>Presenter:</b>	Brian Evans, Pace University		
<b>Description:</b>	<p>Providing students in urban settings with quality teachers is important for student achievement. This study examined the differences in content knowledge, attitudes toward mathematics, and concepts of teacher self-efficacy among teachers in the NYC Teaching Fellows program, and informs teacher education in mathematics alternative certification. Findings revealed that high school teachers had significantly higher content knowledge than middle school teachers. Mathematics Teaching Fellows had significantly higher content knowledge than Mathematics Immersion Teaching Fellows. Mathematics and science majors had significantly higher content knowledge than other majors. Finally, mathematics content knowledge was not related to attitudes toward mathematics and concepts of self-efficacy.</p>		
<b>Session 40</b>		<b>Research Session</b>	<b>11:25 – 11:50 AM</b>
<b>Title:</b>	The Impact of Sustained Professional Development in STEM Project Based Learning on District Outcomes		
<b>Presenters:</b>	Robert Capraro, Texas A & M University Mary Margaret Capraro, Texas A & M University Sencer M. Corlu, Texas A & M University Rayya Younes, Texas A & M University SunYoung Han, Texas A & M University		
<b>Description:</b>	<p>Sustained professional development (PD) can support school district reform across the salient factors of student achievement, teacher satisfaction and retention, fidelity of implementation, and the development of professional learning communities (PLCs). This presentation will outline the administration and results of a four-year design study (two years prior to the start of the project and two additional years) where sustained (10 days per school year) PD for teachers and administrators of three high schools on Science, Technology, Engineering, and Mathematics (STEM) PBL and the formation and maintenance of PLCs. Both qualitative and quantitative data were collected.</p>		

<b>Thursday</b>	<b>Lunch</b> <b>Royal Palm Ballroom</b>	<b>12:00 – 1:00 PM</b>
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# Thursday Afternoon Sessions

Session 41	Eagle's Nest A	1:00 – 1:50
<b>Title:</b>	Promoting Natural Science Learning of Taiwanese 5th and 6th Graders	
<b>Presenter:</b>	I-shin Chen, Taipei Municipal University of Education	
<b>Description:</b>	The purpose of the study is improve the learning of Taiwanese 5th and 6th graders through Natural Science exploration using creatively assisted teaching materials. Quasi-experimental designed research will be conducted. Two groups are identified in urban and rural areas. One is an experimental group, and the other is the control group for each grade in both sample schools. Two sample schools include 8 classes (2 classes each grade for every sample school, i.e., 4 classes for each school). Statistical outcomes of ANOVA (Analysis of Variance) and ANCOVA (Analysis of Covariance) will be shown in the study.	
Session 42	Eagle's Nest B	1:00 – 1:50 PM
<b>Title:</b>	The Internet in Science and Mathematics Education : Increasing Efficiency or Taking Over?	
<b>Presenter:</b>	Janet Williams, Youngstown State University	
<b>Description:</b>	E-mail, blogs, social networks, podcasts, E-books, and streaming video: do they remain options for enhancing high-quality learning, or have they become so invasive that they waste valuable teaching/learning time in the classroom? Technology was supposed to make education more efficient, but then in many classrooms it took over. Join this discussion to share your experiences, learn a few ways you and your students can avoid reaching an internet overload, and help others crystallize a personal use-of-technology position.	
Session 43	Royal Palm C	1:00 – 1:50 PM
<b>Title:</b>	An Assessment of Scientific and Quantitative Reasoning at a Small Liberal Arts University	
<b>Presenter:</b>	Mary Wagner-Krankel, St. Mary's University	
<b>Description:</b>	Universities are increasingly interested in determining the scientific and quantitative reasoning skills of their students as part of their overall assessment plan. St. Mary's University in San Antonio recently participated with three other universities in a collaborative NSF grant obtained by James Madison University of Virginia. The purpose was to develop a scientific and quantitative reasoning test and to determine its effectiveness in diverse student populations. The development phase of the mathematical and scientific literacy objectives and questions will be discussed.	

<b>Session 44</b>	<b>Pelican A</b>	<b>1:00 – 1:50 PM</b>
<b>Title:</b>	Using Vernier Technology to Promote the Integration of Mathematics and Science	
<b>Presenters:</b>	Suzanne Nesmith, Baylor University Sandi Cooper, Baylor University Casey Oates, Baylor University	
<b>Description:</b>	A litany of compelling rationales exists regarding the benefits of science-mathematics integration, yet integration can only be justified if students' understanding of science and mathematics content is enhanced. Subsequently, when deciding to formulate a mathematics-science integration project in our education courses, we chose to incorporate Vernier technology. Vernier provides data-collection software, sensors, and interfaces to create dynamic, relevant mathematics and science experiences. Strategies for utilizing Vernier in the university classroom as well as pre-service teachers' examples of Vernier technology in the elementary classroom will be shared.	

<b>Session 45</b>	<b>Pelican B</b>	<b>1:00 – 1:50 PM</b>
<b>Title:</b>	Guided Action Research Projects on Correlated Mathematics and Science	
<b>Presenters:</b>	Selina Mireles, Texas State University, San Marcos Bryan Nankervis, Texas State University, San Marcos	
<b>Description:</b>	The purpose of this presentation is to discuss a process of constructing guided action research projects with in-service and pre-service teacher participants in Texas State University's Mathematics Mix It Up program. Two projects, one focusing on mathematics technologies and Zometools and one addressing recently approved high school mathematics courses in Texas (Agriculture, Food, and Natural Resources; Engineering Mathematics; Statistics and Risk Management), will be highlighted. In particular, interventions as they relate to the correlation model which includes standards alignment will be explored as well as results of the studies. Attendees will receive lesson plans and suggestions for implementation.	

<b>Session 46</b>	<b>Osprey A</b>	<b>1:00 – 1:50 PM</b>
<b>Title:</b>	Elementary Pre-Service Teachers' Conceptualization and Instructional Capacity in Division of Fractions by using Mathematical Habits Of Mind.	
<b>Presenters:</b>	Hsing-Wen Hu, University of Wisconsin, River Falls Cheng-Yao Lin, Southern Illinois University	
<b>Description:</b>	This session will present methods for mathematics educators to promote the development of elementary pre-service teachers' conceptualization in the division of fractions with their Mathematical Habits of Mind. These methods also develop pre-service teachers' capacity for organizing the curriculum in the division of fractions by integrating Mathematical Habits of Mind into the teaching processes.	

<b>Session 47</b>		<b>Osprey B</b>	<b>1:00 – 1:50 PM</b>
<b>Title:</b>	An Assessment of Error Patterns of College Students in Trigonometry		
<b>Presenters:</b>	Alan Zollman, Northern Illinois University Scott Schmale, Northern Illinois University		
<b>Description:</b>	Students tend to reproduce the same mistakes year after year in mathematics. This study identifies and categorizes common mistakes made by first-year college students in a pre-calculus trigonometry/elementary functions course. The analysis then is extended to prescribe instructional changes to counteract the possible root misconceptions and deficiencies behind these mistakes. Students' strengths in and reliance on prior coursework in arithmetic and algebra are diagnosed from the results, and curriculum modifications that attempt to build positive connections to these strengths are suggested.		

<b>Session 48</b>		<b>Eagle's Nest B</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Developing an Understanding of Inquiry and Content in Science Teachers		
<b>Presenters:</b>	David Davison, Montana State University Billings Ken Miller, Montana State University Billings Jeanie Kalotay, Montana State University Billings		
<b>Description:</b>	Participants will be involved in a discussion of the PRISM grant and how we worked to develop better elementary science content understanding while also working to help them to become more inquiry oriented teachers. Research results will be presented and participants will be engaged in a short activity and discussion.		

<b>Session 49</b>		<b>Royal Palm C</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Secondary Transition to College Mathematics Courses		
<b>Presenter:</b>	Bob Thomas, Eastern Kentucky University		
<b>Description:</b>	The EKU Mathematics Education team in the Department of Mathematics and Statistics was tasked to assist regional school districts and high schools in designing and implementing 'transition to college' math courses. The pilot programs center on a framework of content and concepts roughly aligned with the Developmental Courses at EKU adapted to the specific needs and conditions in each high school. Teachers in each school are charged with designing instructional plans based on the curricula provided by the EKU Math Education team. These plans have been referred to as "Perfect Plans", whereby the teachers can design instructional plans without the usual constraints involved in such processes.		

<b>Session 50</b>		<b>Pelican A</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Preservice Elementary Teachers' Conceptions about Global Climate Change: A Podcast Response Assignment		
<b>Presenter:</b>	Kate Popejoy, University of North Carolina at Charlotte		
<b>Description:</b>	Many preservice elementary teachers are not well prepared to teach science and often are not aware of technology-based resources which may help. For three years, my students have been completing a "Science Friday" podcast response paper, in which they answer questions about global climate change. Though often presented in popular media, the majority of students report little knowledge of climate change before completing the assignment. Most also write that their perceptions have changed due to completing the paper. In this session, I will present data and solicit discussion about how we can increase students' awareness of this important environmental topic.		

<b>Session 51</b>		<b>Pelican B</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Correlated Science and Mathematics: A Teacher Training Model to Link Both Disciplines		
<b>Presenters:</b>	Sandra Browning, University of Houston - Clear Lake Sandra West, Texas State University		
<b>Description:</b>	This session focuses on a model of linking science and mathematics instruction: Correlated Science and Mathematics (CSM). In this model, the concepts of each discipline are taught with seven goals: (1) teaching for conceptual understanding; (2) using each discipline's proper language; (3) making natural links between the disciplines; (4) identifying parallel ideas between the disciplines; (5) identifying language confusing to students; (6) using standards-based learning objectives; and (7) using a 5E inquiry format when appropriate.		

<b>Session 52</b>		<b>Osprey A</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Factors that Affect Teachers' Performance on the Physics PRAXIS		
<b>Presenter:</b>	Sheila F. Pirkle, Austin Peay State University Jennie Preston-Sabin, Austin Peay State University Bonnie Hodge, Austin Peay State University		
<b>Description:</b>	This presentation will analyze variables influencing veteran science teachers' performance on the Physics PRAXIS Test.		

<b>Session 53</b>		<b>Osprey B</b>	<b>2:00 – 2:50 PM</b>
<b>Title:</b>	Application Based Learning: Evidence Provided from Math Methods Course		
<b>Presenter:</b>	Zhonghe Wu, National University		
<b>Description:</b>	To measure pre-service teachers' knowledge, skill, and disposition, this presentation discusses tasks that are used in mathematics methods course. These tasks are based on concept – procedural – application and intend to help pre-service mathematics teachers improve their mathematics teaching knowledge, skills and disposition. Data were collected from mathematics methods course through pre-test, post-test, and students' works during class activities. The results show that most pre-service teachers' knowledge, skills, and disposition are much stronger after mathematics methods course. The study suggests that mathematics methods course must provide rich tasks for pre-service teachers to work, practice, and reflect.		

<b>Sessions 54 &amp; 55</b>		<b>Eagle's Nest A</b>	<b>3:00 – 3:50 PM</b>
<b>Session 54</b>	<b>Regular Session</b>	<b>3:00 – 3:25 PM</b>	
<b>Title:</b>	Using Area Estimation to Assess Equity Among Diverse Populations		
<b>Presenter:</b>	George Selitto, Iona College		
<b>Description:</b>	This session helps students better understand how equity can be applied to different aspects of society. We will use actual data to measure how wealth and resources are shared in different populations. This session provides a method to quantify and explore what it means to "share the wealth." Data analysis, economics, and the area under a curve are all used. Student exercise work sheets will be provided.		
<b>Session 55</b>	<b>Research Session</b>	<b>3:25 – 3:50 PM</b>	
<b>Title:</b>	Impact of Explicit Number Names in North, Central, and South America		
<b>Presenter:</b>	Judith Beauford, University of the Incarnate Word		
<b>Description:</b>	A research project replacing tradition number names with explicit names (26 is read "two-ten six" or "dos-diez seis" as children first learn to count has been extended to include sites in the US, Mexico, and Bolivia. It is hypothesized that children will have an advantage in the development of number sense and place value since the direct reference to place value will be a basic part of their understanding of two-digit numbers. This session will compare results among countries and languages.		

<b>Sessions 56 &amp; 57</b>		<b>Eagle's Nest B</b>	<b>3:00 – 3:50 PM</b>
<b>Session 56</b>	<b>Research Session</b>	<b>3:00 – 3:25 PM</b>	
<b>Title:</b>	A Professional Development Program for Middle School Teachers		
<b>Presenter:</b>	Sue Brown, University of Houston-Clear Lake		
<b>Description:</b>	Findings from a 2009-2010 professional development program for middle school mathematics teachers will be presented. The effects of the program on teacher's content and pedagogical knowledge of algebra will be discussed. Post-observation of classroom teaching, examples or student work, and student assessment data will be shared.		
<b>Session 57</b>	<b>Research Session</b>	<b>3:25 – 3:50 PM</b>	
<b>Title:</b>	Determining Quality Teachers: TFA Teacher Mathematical Content Knowledge, Self-Efficacy, and Attitudes		
<b>Presenter:</b>	Brian Evans, Pace University		
<b>Description:</b>	It is important to understand the relationships between mathematical content knowledge, self-efficacy, and attitudes toward mathematics in new teachers. A cohort of Teach America teachers took the New York Content Special Test in mathematics at the start of their program, and attitudes toward mathematics instrument before and after their first year teaching. Teachers completed a self-efficacy instrument in their second year. Findings revealed that teachers had high levels of self-efficacy. Mathematics related majors had higher mathematical content knowledge than business majors, but similar self-efficacy levels. Liberal arts majors had similar content knowledge and levels of self-efficacy as mathematics related majors.		

<b>Sessions 58 &amp; 59</b>		<b>Royal Palm C</b>	<b>3:00 – 3:50 PM</b>
<b>Session 58</b>	<b>Research Session</b>	<b>3:00 – 3:25 PM</b>	
<b>Title:</b>	Examining Teachers' Enactments of Standards-Based Mathematics Curricula		
<b>Presenter:</b>	Drew Polly, University of North Carolina, Charlotte		
<b>Description:</b>	This presentation will share findings from a Mathematics-Science Partnership project that provided elementary school teachers over 80 hours of professional development to support their use of Investigations, a standards-based mathematics curriculum. Observations of teachers' instruction, surveys of teachers' beliefs and student learning outcomes were collected and analyzed. Preliminary findings indicated that teachers were able to implement the curriculum with fidelity in most areas, but struggled in posing high-level questions and modifying their lesson to address students' misconceptions. Further, there was a relationship found between teachers' beliefs and student learning outcomes; teachers who reported a more constructivist-oriented view towards mathematics had statistically significant higher gains on student learning outcomes.		



<b>Session 59</b>		<b>Research Session</b>	<b>3:25 – 3:50 PM</b>
<b>Title:</b>	A Longitudinal Look at the Equal Sign Through the Lens of Textbook Authors		
<b>Presenters:</b>	Mary Margaret Caparo, Texas A & M University Robert Capraro, Texas A & M University Rayya Younes, Texas A & M University SunYoung Han, Texas A & M University		
<b>Description:</b>	Textbooks serve as an artifact providing a glimpse backward into the archives of education. In this study, the equal sign context in four elementary mathematics textbook series were examined longitudinally over four decades. These texts were coded using 11 different categories. Results indicated that textbook publishers and authors, while making progress toward including multiple contexts still need to include a greater variety of problems promoting a relational understanding of the equal sign.		

<b>Sessions 60 &amp; 61</b>		<b>Pelican A</b>	<b>3:00 – 3:50 PM</b>
<b>Session 60</b>		<b>Research Session</b>	<b>3:00 – 3:25 PM</b>
<b>Title:</b>	Helping Mathematics Methods Students Reflect on Their Practice		
<b>Presenter:</b>	Dixie Metheny, Montana State University-Billings		
<b>Description:</b>	The presenter will describe the types of activities that students complete which involve reflecting on their teaching. After teaching a lesson, the pre-service teacher reflects on the experience. Reflections are graded by rubrics at both the junior and senior levels. Information about the student assignments and sample rubrics will be shared. The presenter will share how this information has been used to improve our program.		
<b>Session 61</b>		<b>Research Session</b>	<b>3:25 – 3:50 PM</b>
<b>Title:</b>	Exponential Growth and Decay Concepts in the Middle School Classroom		
<b>Presenters:</b>	James Sheridan, Rockford Environmental Science Academy Amanda Shuga, Rockford Environmental Science Academy Mary Shafer, Northern Illinois University Helen Khoury, Northern Illinois University		
<b>Description:</b>	In this presentation we will describe our findings of engaging middle school students in hands-on activities about exponential growth and decay concepts in mathematics classrooms. We will report on how we guided their understanding of rates of change and exponential functions. Students' problem-solving strategies will be shared including their uses of multiple representations as they generated data tables, wrote equations and graphed related data. We presented these activities to a cohort of teachers in a Mathematics and Science Partnership graduate program. We will share our observations about responses and representations used by our middle school students and by cohort teachers.		

<b>Sessions 62 &amp; 63</b>		<b>Pelican B</b>	<b>3:00 – 3:50 PM</b>
<b>Session 62</b>		<b>Regular Session</b>	<b>3:00 – 3:25 PM</b>
<b>Title:</b>	Scientists, mathematicians, & educators: Getting to the heart of collaboration . . . a True Story.		
<b>Presenters:</b>	Andrea Foster, Sam Houston State University Bill Jasper, Sam Houston State University		
<b>Description:</b>	This session will share the story of a two year journey to design and implement a Model Middle Level Science Teacher Preparation Program through a collaborative effort of the College of Education and College of Arts & Sciences. The session focuses on what works when vision confronts ego and agenda.		
<b>Session 63</b>		<b>Research Session</b>	<b>3:25 – 3:50 PM</b>
<b>Title:</b>	Relationship Between Teachers' Perceptions of Instruction for Student-Centered Learning and Observed Behaviors		
<b>Presenters:</b>	Stephanie Knight, Penn State University Dawn Parker, Texas A&M University		
<b>Description:</b>	The purpose of this study was to determine teachers' perceptions of productive participation and the extent to which students engaged in productive participation in math and science. Research questions addressed teachers' perceptions of instructional strategies and student activities that have been implemented in math/science classes in independent schools in relation to outside observations of these strategies and activities.		

<b>Sessions 64 &amp; 65</b>		<b>Osprey A</b>	<b>3:00 – 3:50 PM</b>
<b>Session 64</b>		<b>Research Session</b>	<b>3:00 – 3:25 PM</b>
<b>Title:</b>	Pre-Service Teacher Demographics: Beliefs and Trends Concerning Science Inquiry		
<b>Presenters:</b>	Patricia O'Donnell, Lehigh University Lynn Columba, Lehigh University		
<b>Description:</b>	The purpose of this presentation is to allow the audience to examine a final dissertation investigation including statistical analysis to differentiate pre-service teacher demographics and whether their pre-conceived beliefs affect their willingness and ability to implement inquiry-based instruction. The findings will be discussed to discover whether demographics such as traditional and non-traditional pre-service teachers show a need for new teaching strategy development to enhance the quality as well as the carry over of inquiry-based instruction into the new teacher's future science classrooms.		

<b>Session 65</b>		<b>Regular Session</b>	<b>3:25 – 3:50 PM</b>
<b>Title:</b>	The Creek Experience: Blending The Oral Tradition with 21st Century Science		
<b>Presenter:</b>	Margaret Bogan, Florida Gulf Coast University		
<b>Description:</b>	Blending the oral tradition with 21st century science, is written in six major segments, followed by a discussion. It presents information learned by the author as she became acculturated in to the Florida Creek Indian Society and an accepted Elder of the Pasco Band of Creek Indians. Florida Creek Indian ways today teaches the mindset of the People. The Creek worldview delves into Creek cosmology. The lessons we are taught and Medicine sections present a glimpse of day-to-day applicable knowledge of ecology. These sections are followed by modern day understand of the chemistry of Creek medicine. These sections are correlate tribal knowledge with ecology.		

<b>Sessions 66 &amp; 67</b>		<b>Osprey B</b>	<b>3:00 – 3:25 PM</b>
<b>Session 66</b>		<b>Research Session</b>	<b>3:00 – 3:25 PM</b>
<b>Title:</b>	Professional Development to Sustain Quality Science Teaching		
<b>Presenters:</b>	Patricia Dixon, Florida State University Jose Sanchez, Florida State University		
<b>Description:</b>	The National High Magnetic Field Laboratory's education center provides quality professional development to pre-service and in-service elementary and secondary teachers. This session will describe three models of professional development. Research on these models indicate that teachers who participate in content-rich or laboratory experiences have a greater understanding of the nature of science and the process of science. These translate into implementing inquiry-based activities with K12 students. A national research laboratory is in a unique position to provide real-world experiences for teachers. Professional development models created at the center offer a look at research-based best practices.		
<b>Session 67</b>		<b>Research Session</b>	<b>3:25 – 3:50 PM</b>
<b>Title:</b>	Where Are We? Profiles of Practice for Retaining High School Science Teachers and Increasing Student Science Achievement		
<b>Presenters:</b>	Carol Stuessy, Texas A&M University Dane Bozeman, Texas A&M University		
<b>Description:</b>	“Where are we?” Answering this policy research question has been the overarching goal of the Policy Research Initiative in Science Education (PRISE) Research Group. In 2005, the National Science Foundation funded Texas A&M University to describe the current state-of-the-state of the high school science teacher professional continuum (TPC) in Texas. The five-year initiative focused on practices of Texas high schools and their science teachers in the processes of recruitment, induction, renewal, and retention of teachers in the high school science TPC. To answer the “where are we” question, the PRISE Research Group developed a series of research questions and methods for describing and comparing various aspects of the high school science TPC in Texas.		

<b>Session 68</b>		<b>Eagle's Nest A</b>	<b>4:00 – 4:25 PM</b>
<b>Title:</b>	The Use of Electronic Discussion Boards in College Mathematics Courses		
<b>Presenter:</b>	Kansas Pope, University of Central Oklahoma		
<b>Description:</b>	Electronic discussion boards provide a resource for questions that arise outside of actual class time while also building the students ability to communicate mathematically. This presentation describes both the actual use of the discussion boards by college mathematics students, as well as their perceptions of the benefits and struggles associated with the use of the discussion boards. The understandings provided by the students in the freshman and sophomore level courses provide insight into the students' ability to communicate mathematically and strategies employed by the students when they experienced difficulty communicating their thoughts and questions.		

<b>Session 69</b>		<b>Eagle's Nest B</b>	<b>4:00 – 4:25 PM</b>
<b>Title:</b>	Assessing the Influence of Science Teacher Preparation on Reform-Based Beliefs and Practices		
<b>Presenters:</b>	John Tillotson, Syracuse University Monica Young, Syracuse University Robert Yager, University of Iowa John Penick, North Carolina State University		
<b>Description:</b>	The NSF-sponsored IMPACT Project is a multi-university research study investigating the longitudinal influence of preservice experiences on secondary science teachers' beliefs and classroom practices. Our specific goal is to study how science teachers' beliefs and vision of effective science instruction change over time as a result of key preservice program interventions. Classroom observations, in-depth interviews and repeated surveys serve as primary data sources. Findings suggest that interventions such as coursework in the nature of science, multiple science methods courses, developing a research-based rationale, and peer cohorts are all significant factors in promoting science teaching practices advocated for in the NSES.		

<b>Session 70</b>		<b>Pelican A</b>	<b>4:00 – 4:25 PM</b>
<b>Title:</b>	Girls Engaged in Mathematics and Science: An Evaluation of GEMS Exhibition		
<b>Presenter:</b>	Melanie Shores, The University of Alabama at Birmingham Tommy Smith, The University of Alabama at Birmingham		
<b>Description:</b>	The GEMS Exhibition was designed to recruit the top 100 mathematics and science projects created by female students, K-12, across Alabama. Teachers and students used lesson plans developed during the GEMS Workshop to develop a project that incorporated hands-on learning and technology. Each student or group was required to submit their project proposal via ALEX and selections were made after repeated panel reviews. Those selected presented their projects at the GEMS Exhibition with results including the presentation of 51 mathematics and science projects by some 107 K-12 female students from schools across the state.		

Session 71	Pelican B	4:00 – 4:25 PM
<b>Title:</b>	Oregon Science Teachers Partnership	
<b>Presenter:</b>	Karen Bledsoe, Western Oregon University Heidi Kellar, Oregon Science Teachers Partnership Edith Gummer, Education Northwest	
<b>Description:</b>	Explore a blended model of professional development where teachers gain content knowledge from online learning modules and pedagogy skills from face-to-face Professional Learning Community meetings. The Oregon Science Teachers Partnership has developed a blended model of professional development that increases teacher content knowledge through online learning modules and teacher pedagogy skills through face-to-face professional learning communities In addition; students will increase their content knowledge as demonstrated in state level assessments.	

Session 72	Osprey A	4:00 – 4:25 PM
<b>Title:</b>	Examining Changes in Teachers’ Pathways of Development Following Reform-oriented In-service	
<b>Presenter:</b>	Arla Westenskow, Utah State University	
<b>Description:</b>	This study uses narrative inquiry to investigate long term influences of reform-oriented mathematics teacher in-service programs. Five years after program participation, the original cohort of six teachers reflected on how their in-service participation influenced their instructional methods. Deleuze and Guattari’s Rhizome theory of change was used to examine the teachers’ developmental pathways. Reflecting on the in-service, each teacher reported a different perspective of what they learned. At first, teachers’ pathways were closely interwoven but as contexts changed, teachers’ implementation of reform practices diversified.	

<b>Session 73</b>		<b>Osprey B</b>	<b>4:00 – 4:25 PM</b>
<b>Title:</b>	The Road to Culturally Relevant Science: Exploring How Teachers Navigate Change in Pedagogy		
<b>Presenter:</b>	Carla C. Johnson, University of Cincinnati		
<b>Description:</b>	<p>In this, study two middle school teachers who participated in a professional development program utilizing the Transformative Professional Development (TPD) model (Author &amp; other, 2009) are followed as they embarked upon becoming culturally relevant science teachers of Latino students. Using Ladson-Billings (1994) theory of culturally relevant pedagogy, teacher interviews, focus groups, journals, and field notes are examined to reveal aspects of culturally relevant pedagogy that the participants translate into their daily science instructional practice in this longitudinal case study. Findings revealed TPD enabled participants to transform their practice to focus on culturally relevant science pedagogy resulting in a more effective instructional environment for their Hispanic students. Implications for further research on professional development and other supports for teachers integrating culturally relevant pedagogy are discussed.</p>		

<b>Committee Meetings</b>		<b>4:30 – 5:00 PM</b>
Awards and Endowments Committee	Alfino Flores, Chair	Eagle's Nest A
Nominations & Elections Committee	Georgia Cobbs, Chair	Eagle's Nest B
Convention Committee*	Diane Schmidt, Chair	Patio
Policy Committee	John Park, Chair	Pelican A
Finance Committee	Don Balka, Chair	Pelican B
Publications Committee	Carla Johnson, Chair	Osprey A
Membership Committee	Catherine Kelly, Chair	Osprey B

\*The Convention Committee will meet a second time on Friday at 8:00 AM on the Patio

<b>Welcome</b>	<b>Royal Palm Ballroom</b>	<b>5:00 – 5:15 PM</b>
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**Opening Remarks**  
 Alan Zollman, President, SSMA


**Welcome from Florida Gulf Coast University**  
 Douglas Spencer, Director, Whitaker Center for STEM Education  
 Marci Greene, Dean, College of Education  
 Donna Price Henry, Dean, College of Arts and Sciences  
 Susan Blanchard, Director, School of Engineering

**Conference Master of Ceremonies: Neil Wilkinson**  
 Neil will keep everyone updated throughout the convention on information related to special events and Saturday’s outdoor sessions.

Neil holds joint appointments with Florida Gulf Coast University, the School District of Lee County, and the Lee County Mosquito Control District. He is also an active member of the Whitaker Center for STEM Education. As a key member of the Convention Planning Committee, Neil took the lead in planning all the outdoor sessions and the Friday dinner.

<b>Keynote</b>	<b>Royal Palm Ballroom</b>	<b>5:15 – 5:45 PM</b>
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**Keynote Speaker: Win Everham (Dr. Disturbance)**



Win Everham is Professor of Marine and Ecological Sciences and a member of the Whitaker Center for STEM Education at Florida Gulf Coast University. Win is a systems ecologist, using computer models to study the flow of energy and matter in ecosystems. He applies this approach to study the role of irregular events (e.g. fire, flood, hurricane, drought) on the structure and function of ecosystems, thus the nickname “Dr. Disturbance”. Win grew up in Detroit, Michigan and completed his undergraduate work at Michigan Technological University. He worked as a wildlife biologist for the US Forest Service in Oregon, taught high school chemistry and biology in Wisconsin, and taught chemistry and physics in Malawi, Africa with the U.S. Peace Corps. Win received his Ph.D. in Environmental Science and Forestry from the State University of New York, where he worked as a Department of Energy Graduate Fellow in Global Climate Change, studying the impacts of hurricanes on forest in the Caribbean.

<b>Reception</b>	<b>Royal Palm Ballroom</b>	<b>5:45 – 7:30 PM</b>
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## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

Convention Registration Desk

7:30 AM - 5:00 PM

Continental Breakfast

7:00 AM - 8:30 AM

## Friday Morning Sessions

### Session 74

### Eagle's Nest A

8:00 - 8:25 AM

<b>Title:</b>	Guidelines and Recommendations for Teaching High School Chemistry
<b>Presenter:</b>	Susan J. Cooper, Florida Gulf Coast University
<b>Description:</b>	The revisions to the American Chemical Society <i>Guidelines and Recommendations for Teaching High School Chemistry</i> will be discussed. Highlights include how students learn chemistry, pathways to learning chemistry, physical plant requirements, and professional responsibilities.

### Session 75

### Eagle's Nest B

8:00 - 8:25 AM

<b>Title:</b>	GEMS: An Active-Learning Science Program for Middle-School Girls With Environmental Science Applications
<b>Presenters:</b>	Terry A. Dubetz, Florida Gulf Coast University Jo Ann Wilson, Florida Gulf Coast University
<b>Description:</b>	Girls in Engineering, Math and Science (GEMS) is a hands-on program for middle-school girls. GEMS is a series of science and math activities led by female scientists and university students. There is a national shortage of scientists and science literate citizens, with women under-represented in the fields of math, science, engineering and technology. GEMS strives to develop interest in these fields at an early age and also provides female role models to encourage girls to consider math and science for career paths. The philosophy and implementation of the GEMS program will be discussed with activities specifically related to environmental science.

<b>Session 76</b>		<b>Royal Palm C</b>	<b>8:00 - 8:25 AM</b>
<b>Title:</b>	High School Science Teacher Induction Support in Texas: Implications for Science Educators		
<b>Presenters:</b>	Toni Ivey, Oklahoma State University Carol Stuessy, Oklahoma State University		
<b>Description:</b>	Many beginning teachers work in isolation and are expected to work with the knowledge and skills of expert teachers. Alarming beginning teacher attrition rates and reported shortages in science teachers make science teacher induction a relevant and practical topic of study. The quality and quantity of beginning science teacher support varies from school to school. This presentation offers a snapshot into the types of supports offered to beginning science teachers and science teacher mentors in Texas. Suggestions are made for increasing science educator involvement in the seamless support of science teachers.		

<b>Session 77</b>		<b>Pelican A</b>	<b>8:00 - 8:25 AM</b>
<b>Title:</b>	NERDS at Nine		
<b>Presenters:</b>	Jacque Ewing-Taylor, University of Nevada Richard Vineyard, Nevada Department of Education		
<b>Description:</b>	Nevada Educators Really Doing Science (NERDS) is a program of professional development for teachers in all grades K-12, where participants learn science content using science process skills to design and perform investigations in the field. The NERDS program is founded upon research and best practice associated with situated learning theory, teacher efficacy, integration of technology, scientific inquiry. As NERDS approaches a decade of work, the wealth of data allows for the study of how the program impacts teacher participants with regard to: grade level taught, years of experience, and time spent participating in NERDS program activities.		

<b>Session 78</b>		<b>Pelican B</b>	<b>8:00 - 8:25 AM</b>
<b>Title:</b>	Afterschool Engineering for Girls: You Can Build Stuff and Eat Cookies		
<b>Presenters:</b>	Adrienne Redmond, Oklahoma State University Julie Thomas, Oklahoma State University Stephanie Backoff, Oklahoma State University Karen High, Oklahoma State University		
<b>Description:</b>	This research presentation will describe the results of study designed to examine the experiences of middle school girls and their college engineering mentors in an afterschool engineering project designed to help middle school girls see how the mathematics and science they are learning in school can be applied in an engineering context, to increase engineering career awareness for middle school girls, and to increase the number of female students entering the STEM pipeline.		

<b>Session 79</b>		<b>Osprey A</b>	<b>8:00 - 8:25 AM</b>
<b>Title:</b>	Integrative Teaching in a Large Enrollment Section of Introductory Biology		
<b>Presenters:</b>	Charles Gunnels, Florida Gulf Coast University Nora Demers, Florida Gulf Coast University		
<b>Description:</b>	Implementation of SCALE-UP (Student Centered Activities for Large Enrollment Undergraduate Programs) has proven difficult at Florida Gulf Coast University, resulting in low pass and retention rates. To overcome this challenge, we developed an integrative teaching approach that mirrored the original intention of SCALE-UP: we created classes based on seamless transitions between traditional lectures, hands-on activities, laboratory experiments, and classroom discussions in a team-taught large-section class. The diversity of teaching styles addressed the different learning style of students, allowing each student to benefit from different instructional techniques.		

<b>Session 80</b>		<b>Osprey B</b>	<b>8:00 - 8:25 AM</b>
<b>Title:</b>	Innovative Uses of Digital Video to Explore Science and Mathematics		
<b>Presenter:</b>	John Park, North Carolina State University		
<b>Description:</b>	Techniques such as stop-motion animation and the use of high-speed cameras have enabled individuals to produce digital videos for the exploration of science and mathematics. Software tools such as Vernier Software and Technology's Logger Pro allow users to analyze motion from off-air recording of athletic events or from clips of cinema. I will share some of the movies that I have created for analysis, and demonstrate how they can be used in the science and mathematics classroom.		

<b>Session 81</b>		<b>Eagle's Nest A</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Word Walls: Strategies for use in Mathematics and Science Classrooms		
<b>Presenters:</b>	Molly Weinburgh, Texas Christian Univesity Kathy Smith, Texas Christian Univesity		
<b>Description:</b>	The session is designed to show mathematics and science education faculty ways to incorporate word walls into the teaching of mathematics and science. The presenters have taught mathematics and science to English language learners enrolled in summer school in an urban district. During the summer, acquisition of academic language skills was a high priority. They will present examples of types of Word Walls that have been used successfully in mathematics and science during the summer program. In addition, video clips of ELL students using the Word Walls with the discipline area will be shared.		

<b>Session 82</b>	<b>Eagle's Nest B</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Using Mosquitoes to Teach Science, Environmental Education and Environmental Health	
<b>Presenters:</b>	Brian Murphy, School District of Lee County Eric Jackson, School District of Lee County	
<b>Description:</b>	For 22 years the local Lee County Mosquito Control District has supported an educational outreach program that is conducted in the Lee County School District. The program has 3 full time instructors: one that works as an instructor at Florida Gulf Coast University and two teachers that are environmental education specialists and work for the local school district. Funding for all three positions and their operating budget is provided by the local mosquito control district. There are five programs offered: a one day program for kindergarten; a full week program of study for grades 5 and 7; a high school biology program; and a high school chemistry program.	

<b>Session 83</b>	<b>Royal Palm C</b>	<b>8:30 - 9:00 AM</b>
<b>Title:</b>	Factors Influence NGA Graduation Rate and math performance by District in Florida	
<b>Presenters:</b>	Houbin Fang, University of Southern Mississippi Richard Mohn, University of Southern Mississippi Qi Zhou, University of Southern Mississippi	
<b>Description:</b>	The researchers used the public data base from the Florida Department Educational to identify contributions of mathematics teachers' degree levels, experiences, salary levels, and students' performance in reading and writing to high school graduation rate. In addition, researchers analyzed those factors listed above in relation to students' mathematics performance in the state of Florida. The results will help educators identify which factor have the most impact to graduate rate and math scores, how much they impact them, how to predict the graduation rate, and how to help Florida students improve their math scores.	

<b>Session 84</b>	<b>Pelican A</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Sustaining K-5 Science Education under the Pressure of AYP Scores	
<b>Presenters:</b>	Leslie Sandra Jones, Valdosta State University	
<b>Description:</b>	Science has become a lower priority in elementary education because teachers must emphasize performance skills impacting the ELA and Math scores used for AYP. In order to help early childhood teachers expand their science content knowledge and see how science lessons do not mean sacrificing attention to "high stakes" subject areas, we started an initiative focused on integrating standards-based science with other K-5 subjects. Participants can try inquiry-based activities that are part of lessons on the nature of science and discuss why we must be very explicit that "Integration Is Much More than Just Mixing Math and Science."	

<b>Session 85</b>		<b>Pelican B</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Class Openers that Enhance the Learning of Mathematics		
<b>Presenter:</b>	Juliana Utley, Oklahoma State University		
<b>Description:</b>	As teachers and teacher educators, we see the need for pre-service teachers and students at all levels to deepen their mathematical knowledge base. Thus, the purpose of this session is to share with both practicing teachers and teacher educators effective class openers for helping students develop their spatial sense, geometric vocabulary, and mathematical fluency. Participants will actively engage in each of the class openers. Additionally, the titles of some helpful practitioner resources will be shared.		

<b>Session 86</b>		<b>Osprey A</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Agent-Based Modeling for Teaching and Learning		
<b>Presenter:</b>	Max Crain, Center for Connected Learning and Computer-Based Modeling, Northwestern University		
<b>Description:</b>	Agent-based modeling offers opportunities for students and teachers to engage in fun, mutually rewarding "lab" experiments in the natural and social sciences. Students frame questions, work out and test explanations, and discuss mechanisms and results. They employ basic mathematics to represent relationships and to analyze model behavior. The presentation will focus on examples of computer-based activities that complement other ways of learning in the classroom and lab. It will feature classroom-tested examples from several disciplines, including biology (natural and artificial selection; predator-prey dynamics), physics (the Doppler effect; wave superposition), mathematics (probability), and cognitive science.		

<b>Session 87</b>		<b>Osprey B</b>	<b>8:30 - 9:50 AM</b>
<b>Title:</b>	Why is Math Difficult for ELLs and What Can Teachers Do?		
<b>Presenters:</b>	Linda Gerena, York College, Cuny Amy Brown, Utah State University		
<b>Description:</b>	This presentation will focus on the intersection of language and math and the linguistic and non linguistic areas of difficulty in math conceptual and computational development. It will address how teachers can prepare their ELL students to develop linguistic skills needed to access mathematical concepts and analytical math skills. Participants will be given specific examples of metacognitive, cognitive and social strategies to improve problem solving, conceptual development, conceptual understanding and computational skills.		

<b>Session 88</b>	<b>Royal Palm A Roundtable</b>	<b>9:00 – 9:50 PM</b>
<b>Title:</b>	<b>Roundtable 1:</b> Current Issues in Sustaining Quality Mathematics Education	
<b>Facilitator:</b>	Don Balka, Saint Mary's College	
<b>Description:</b>	This session is designed to bring to light the progress that has been made in mathematics education over the last 20 years and identify the issues that remain. Participants will be asked to brainstorm ways to overcome the impediments and sustain the progress to ensure all students have equitable access to high quality mathematics education.	

<b>Session 89</b>	<b>Royal Palm B Roundtable</b>	<b>9:00 – 9:50 PM</b>
<b>Title:</b>	<b>Roundtable 2:</b> Current Issues in Sustaining Quality Science Education	
<b>Facilitator:</b>	John Park, North Carolina State University	
<b>Description:</b>	The recent push to include science on state tests for accountability purposes is causing concern for many science teachers. Will testing and the common standards push teachers to change their teaching. The purpose of this roundtable is to explore the issues and propose strategies that can be used to sustain quality science education.	

<b>Session 90</b>	<b>Eagle's Nest A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Teachers' Attitudes Toward Graphing Calculators' Usage in High School Algebra I	
<b>Presenters:</b>	Houbin Fang, University of Southern Mississippi Qi Zhou, University of Southern Mississippi Ryenne McNeese, University of Southern Mississippi Kimberly Carr, University of Southern Mississippi Shauna Hedgepeth, University of Southern Mississippi Chaz Ladner, University of Southern Mississippi Thomas Lipscomb, University of Southern Mississippi	
<b>Description:</b>	The use of graphing calculators in the classroom is still a highly debated issue. In this study, researchers investigated the high school math teachers' view of the usage of graphing calculators in Algebra I. 54 math teachers from about 20 high schools responded. The results indicated that graphing calculators have a positive impact on the Algebra I learning although there are some disadvantages. Most of the participants agreed to introduce the graphing calculators into the Algebra I classes. Math teachers' background knowledge, skills and age are all factors of their opinions toward the usage of graphing calculators in Algebra I.	

<b>Session 91</b>	<b>Eagle's Nest B</b>	<b>10:00 - 10:50 AM</b>
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<b>Title:</b>	What Happens when Children “Take Flight” at a Museum?
<b>Presenters:</b>	Tzu-Ling Wang, National Taiwan Normal University Deb Dunkhase, Iowa Children’s Museum James Shymansky, University of Missouri-St. Louis
<b>Description:</b>	We will report on the response of 250 children, ages 8-12 to an interactive exhibit at a children’s museum focused on the science of flight. The NASA-funded exhibit features hands-on experimentation with flight phenomena ranging from hot air balloons to state of the art flight simulators. Analyses of children’s responses to written surveys and staff interviews assessing understanding of concepts of force and motion related to flight and their attitudes and perceptions about STEM studies, careers and importance will be presented. We will include video footage of children interacting with exhibit components and children being interviewed.

<b>Session 92</b>	<b>Royal Palm C</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Benefits of Rational Number Counting and Unitizing: Results of Action Research	
<b>Presenters:</b>	Lloyd Roberts, Northern Illinois Universtiy Helen Khoury, Northern Illinois University Mary Shafer, Northern Illinois Universtiy	
<b>Description:</b>	Teaching and learning fractions and rational number is a challenge for teachers as well as students. The research literature supports a variety of approaches to teach fractions for understanding. This presentation will report on an action research study conducted in a fifth grade classroom that focuses on enhancing students’ understanding of fractions and operations on fractions through untizing, as well as through the composition and decomposition of units. The scheme of counting will be emphasized throughout instruction. Results will be shared and implications to classroom practices and to existing related research will be made.	

<b>Session 93</b>	<b>Pelican A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Broadcast, Online, Hybrid? Teaching Elementary Math Methods in Distance Education Environments.	
<b>Presenters:</b>	Amy Bingham Brown, Utah State University Katie Anderson, Utah State University	
<b>Description:</b>	This session explores various environments in which elementary and middle school math methods are being taught in one regional-campus, distance education program. Data collected over two semesters will be shared to show perspectives of students and instructor on the effectiveness, potential, and pitfalls of teaching math methods via distance education formats. The session hopes to engage participants in a discussion to: identify concerns, generate ideas, and explore possibilities for more data-driven decisions regarding mathematics teacher preparation over distance systems.	



<b>Session 94</b>		<b>Pelican B</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Interesting Calculus Problems that Promote Understanding		
<b>Presenter:</b>	Robert Cappetta, College of DuPage		
<b>Description:</b>	Piaget's concept of reflective abstraction with Dubinsky's constructs of interiorization, coordination, encapsulation, generalization and reversal can promote understanding in college calculus. This presentation will examine a collection of non-routine problems designed to help students initiate reflective abstraction.		

<b>Session 95</b>		<b>Osprey A</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Motivating Students to Monitor and Assess Their Learning		
<b>Presenters:</b>	Cheryl Frye, Triangular Solutions Shelly Munoz, Triangular Solutions		
<b>Description:</b>	We will provide school data and modules demonstrating how setting clear expectations for student learning, motivating students to play a role in their learning and assessment, and how we successfully use student data to provide re-teaching modules which have not only improved our CST scores but our school's learning culture. We will provide participants the opportunity to actively engage in this process. Our expectations are explicit to both students and parents at the beginning of each instructional unit. Students are given copies of the state standards and after each lesson, students are required to write the lesson or activity next to the standard that was satisfied. Not only does this hold the students accountable, but assists in connecting prior experiences when reviewing for the CST nine months after students learn the material.		

<b>Session 96</b>		<b>Osprey B</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	Teachers' Metaphors of Limit Concepts in Calculus		
<b>Presenters:</b>	Alan Zollman, Northern Illinois University Paul McCombs, Rock Valley College Rita Patel, Northern Illinois University		
<b>Description:</b>	Our research follows a study done by Oehrtman (2009) on the mathematical concept of limit in calculus. In contrast to Oehrtman's investigation, which dealt with introductory calculus student metaphorical reasoning, this study investigates introductory calculus teacher metaphorical reasoning of calculus concepts. Specifically we asked: (a) How do teachers of calculus describe the meaning of a limit? (b) Can teachers' metaphorical reasoning of limit concepts be characterized into similar clusters defined by Oehrtman? (c) When asked to explain, in depth, calculus concepts, do teachers' metaphor self-identification match the study findings?		

<b>Session 97</b>	<b>Royal Palm A Roundtable</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	<b>RoundTable 3:</b> What's Happening to Integration?	
<b>Facilitator:</b>	Georgia Cobbs, University of Montana	
<b>Description:</b>	Increased emphasis on accountability, especially in areas of reading and mathematics, may be shifting educational practices away from integration. Discussion will focus on the benefits of integration and strategies for sustaining the practice.	

<b>Session 98</b>	<b>Royal Palm B Roundtable</b>	<b>10:00 - 10:50 AM</b>
<b>Title:</b>	<b>RoundTable 4:</b> Issues surrounding Field Experiences in Science & Mathematics	
<b>Facilitator:</b>	Gilbert Naizer, Texas A&M - Commerce	
<b>Description:</b>	All colleges of education struggle to provide good quality field experiences and internships, especially related to science and mathematics. Faculty continuously seek ways to provide students opportunities for to observe inquiry teaching and practice using inquiry methods and strategies themselves. The purpose of this discussion is to share successes and provide ideas on how SSMA might contribute to sustaining and disseminating information on effective methods.	

<b>Session 99</b>	<b>Eagle's Nest A</b>	<b>11:00 - 11:50 AM</b>
<b>Title:</b>	Fun with Probability Simulations	
<b>Presenters:</b>	Kathleen Mittag, University of Texas at San Antonio Linda Zientek, Sam Houston State University	
<b>Description:</b>	A simulation of the game "Deal or No Deal" using the graphing calculator will be explored. Concepts explored will be probability, expected value, and statistics.	


<b>Session 100</b>	<b>Eagle's Nest B</b>	<b>11:00 - 11:50 AM</b>
<b>Title:</b>	Making Student Thinking Visible	
<b>Presenter:</b>	Don Balka, Saint Mary's College	
<b>Description:</b>	Research on effective classrooms shows visible thinking weaves throughout teacher planning, presentation, and reflecting. In making thinking visible, teachers have a variety of strategies to use in their classrooms. How these strategies work to increase learning in mathematics is complex. What are classroom activities that make student thinking visible? How can they be extended? What are the benefits of visible thinking? Creating activities make student thinking visible is critical in closing the achievement gap.	

<b>Session 101</b>	<b>Pelican A</b>	<b>11:00 - 11:50 AM</b>
<b>Title:</b>	3D Water Model for Investigating/Assessing Fundamental and Powerful Concepts in the Sciences	
<b>Presenters:</b>	Nora Egan Demers, Florida Gulf Coast University Joanna Salapska-Gelleri, Florida Gulf Coast University	
<b>Description:</b>	Water and its chemical bonding properties emerge as a fundamental and powerful concept that lies at the heart of the natural sciences. We have incorporated activities using 3-D magnetic models of water to help demonstrate the polarity of the molecule, and thereby build ice crystals, model cohesion and adhesion, and observe the solubility properties of water. We assessed students' ability to recall these chemical properties at several intervals during their college experience. During this workshop participants will be able to work with the models, be exposed to the worksheet and hear the assessment results from our work at FGCU.	

<b>Session 102</b>	<b>Pelican B</b>	<b>11:00 - 11:50 AM</b>
<b>Title:</b>	Sustaining the Importance of the Unit Circle Through the use of GeoGebra	
<b>Presenters:</b>	Zyad Bawatneh, University of Central Florida Erhan Haciomeroglu, University of Central Florida	
<b>Description:</b>	As more classrooms incorporate the use of calculators, less emphasis is focused on the need to learn the Unit Circle. Participants will observe the pencil, compass, and protractor method of learning and using the Unit Circle to obtain the trigonometric function values of sine and cosine. The same lesson will then be taught using GeoGebra. Using this advanced technology, the participants will discover that students can still obtain the conceptual understanding required to see where trigonometric functions of angles get their values, but in a more clear and accurate illustration.	

<b>Session 103</b>	<b>Osprey A</b>	<b>11:00 - 11:50 AM</b>
<b>Title:</b>	Creating a Math/Science Integrated Experience	
<b>Presenters:</b>	Suzanne Nesmith, Baylor University Sandi Cooper, Baylor University	
<b>Description:</b>	Mathematics is often called the language of science, and the benefits of integrating the two content areas have long been established. However, if we desire to arm pre-service teachers with the tools necessary to create a classroom where the integration of mathematics and science becomes natural and seamless, then activities and experiences must be devised so as to allow and promote this occurrence. This session will share the activities, assignments, and observation protocol utilized, as well as the failures and triumphs encountered, by two university professors as they work to create a high quality, student centered math science integrated experience.	

Session 104	Osprey B	11:00 - 11:50 AM
<b>Title:</b>	Teachers as Researchers in the Science Classroom	
<b>Presenter:</b>	John Graves, Montana State University	
<b>Description:</b>	<p>This session will feature graduates of the Master of Science in Science Education program as they present capstone research projects conducted in past years. As a part of graduation requirements, candidates must complete and present a project based on the action research model conducted with students in their own science classrooms. Pedagogical issues and current instructional practices specific to the science classroom were investigated in these projects. Four teachers will present classroom research projects. Teacher-researchers will discuss purpose, methodology, analysis, and results of their projects as well as how their research has affected both teacher performance and student performance in the science classroom. Through these teacher-research presentations, participants will be provided with an overview of the benefits and process for conducting classroom investigations using the action research model and will be given the opportunity to ask questions and comment on their own such experiences.</p>	

Friday	Lunch & Keynote Royal Palm Ballroom	12:00 - 1:30 PM
<b>Keynote Speaker: Mike Savarese</b>		
	<p>Mike Savarese has a background that spans the disciplines of biology (zoology, ecology, and evolution) and geology (paleontology, sedimentology, and stratigraphy). He applies these interests to problems concerning the history of environmental change, a pursuit geoscientists refer to as geobiology. He is particularly interested in how climate change and sea-level rise have affected the coastal ecosystems and the morphology and evolution of estuaries. The response of estuarine geomorphology and ecology in the recent, and not so recent, past provides the data to predict how these systems are likely to behave in the future. In addition to his role as Professor of Marine and Ecological Sciences Mike has also served as the Interim Director of Whitaker Center for STEM Education and Director of Graduate Studies at FGCU. He has conducted summer institutes for teachers on how to use their school grounds as laboratories for integrating science and mathematics and taught research methods to middle school students in the Summer Research Opportunity program sponsored by the Whitaker Center.</p>	



# Friday Afternoon Sessions

Session 105	Eagle's Nest A	1:30 - 2:50 PM
<b>Title:</b>	CCM-An Exemplary Inquiry Model	
<b>Presenters:</b>	Joseph Stepan, University of Wyoming Diane Schmidt, Florida Gulf Coast University	
<b>Description:</b>	Conceptual Change Model (CCM), named an exemplary inquiry model by NSTA, incorporates many criteria necessary for learning and development. It is a six-phase process that has the potential to bring about conceptual change and address misconceptions. For more than 2 decades, CCM has been used with students at different levels and with variety of disciplines. Participants will be engaged in activities which demonstrate the natural integration of mathematics and science, using CCM. We will present the results of CCM on student learning and disposition and engage the participants in conversation about our experiences with CCM and various ways of implementing it with all students.	

Session 106	Eagle's Nest B	1:30 - 2:50 PM
<b>Title:</b>	Teaching Mathematics through Music: A profound integrated approach	
<b>Presenter:</b>	Song An, Texas A&M University	
<b>Description:</b>	The lesson development method to integrate mathematics lessons with music composition and music instrument making will be introduced. Participants will have opportunities to compose music through mathematics rules and design music instruments based on mathematical thinking. An insight view of the connection between music and mathematics will be discussed. Two studies on investigating the integration of music and a mathematics lesson as an intervention to promote preservice teachers and elementary students' attitude and beliefs towards teaching and learning mathematics integrated with music will be reported.	

Session 107	Pelican A	1:30 - 2:50 PM
<b>Title:</b>	Creating and Using Scientific Illustrations and Animations to Enhance Biology Education	
<b>Presenter:</b>	Charles Gunnels, Florida Gulf Coast University	

**Description:** Students increasingly visualize biology to discover and learn complex scientific processes, regardless of whether those images come to them through traditional (such as print or television) or modern media (such as YouTube). Visual representations of biology are at the forefront of communicating integrated science in research and education. Scientific illustrations are most successful when they simplify complex processes down to salient points. Unfortunately, many widely distributed scientific illustrations and animations are jumbled messes of busied information. In this workshop, I will help participants develop and modify their own scientific illustrations and animations to improve instruction and student comprehension.

<b>Session 108</b>	<b>Pelican B</b>	<b>1:30 - 2:50 PM</b>
<b>Title:</b>	Algebra Connections: Bridging the Gap Between Concrete and Abstract	
<b>Presenter:</b>	Cassandra Etgeton, University of North Florida	
<b>Description:</b>	Algebra as it is currently taught in secondary schools is the most failed course in America. In order for teachers to reach the students who are, unlike their teachers, concrete or visual learners, teachers must know how to teach using manipulatives and how to design meaningful activities using them that bridge the gap between the concrete and the abstract. Participants will receive templates for making their own manipulatives and learn ways to design activities that will assist concrete thinkers in connecting the algebra concepts and procedures they are learning with the concrete representations they use to understand them.	

<b>Session 109</b>	<b>Osprey A</b>	<b>1:30 - 2:50 PM</b>
<b>Title:</b>	Using Dynamic Geometry Software to Enhance Geometry Instruction	
<b>Presenters:</b>	Tashana Howse, University of Central Florida Mark Howse, University of Central Florida	
<b>Description:</b>	Visualization plays a major role in understanding geometric concepts; it supports intuition and mathematical reasoning. The integration of technology in the teaching of geometry fosters this type of understanding as it provides visual images of mathematical ideas. According to NCTM (2000), the appropriate use of technology helps students gain a deep understanding of mathematics. This presentation will describe the evolution of technology in mathematics teaching and provide a geometric activity which capitalizes on student's geometric intuitions.	

<b>Session 110</b>	<b>Osprey B</b>	<b>1:30 - 2:50 PM</b>
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<b>Title:</b>	Drivers Start Your Engines: The Physics of NASCAR Pasta Pods
<b>Presenter:</b>	Julie Angle, Oklahoma State University
<b>Description:</b>	While the expectations of what middle level students should know and be able to do are governed by state and national standards, the activities designed to meet these expectations are at the professional discretion of the classroom teacher. Thus, STEM activities that address the content and process standards are academically valuable to the teaching community but a lesson that is also authentic and relevant to today's students will aid in engaging diverse student populations. This workshop will provide teachers with the opportunity to facilitate an inquiry lesson that addresses the content standards of Force and Motion.

<b>Session 111</b>	<b>Royal Palm B Roundtable</b>	<b>3:00 - 3:50 PM</b>
<b>Title:</b>	<b>Roundtable 5:</b> Digestion versus Regurgitation?	
<b>Facilitator:</b>	Carla Johnson, University of Cincinnati	
<b>Description:</b>	Discussions regarding understanding versus memorization have gone on for decades. This roundtable will focus on questions and strategies to sustain practices that support understanding of STEM content. Where are we today? Which instructional practices support understanding? How prevalent are they in K-12 settings and university settings? How can we influence the direction?	

<b>Session 112</b>	<b>Royal Palm B Roundtable</b>	<b>3:00 - 3:50 PM</b>
<b>Title:</b>	<b>Roundtable 6:</b> The Changing Image of Colleges of Education	
<b>Presenters:</b>	Catherine Kelly, University of Colorado at Colorado Springs	
<b>Description:</b>	Many people believe that political trends and pressures are challenging the need for Colleges of Education. The increase emphasis on alternative paths to certification, on-the-job training programs, charter schools, and pressures for privatization are impacting public and political opinion. What are the ramifications for sustaining quality STEM Education? What role should organizations like SSMA play in regard to this issue?	

<b>Session 113</b>	<b>Eagle's Nest A</b>	<b>3:00 - 3:25 PM</b>
<b>Title:</b>	Calling for ID: The Overlooked Component of Identity Development for Mathematics Achievement	



<b>Presenter:</b>	Alan Zollman, Northern Illinois University
<b>Description:</b>	We worry about students' physical, social and intellectual development. Yet identity development equally is critical for mathematics achievement. Cycling through best practices in curriculum, instruction and assessment, we find ourselves searching when some students, for unknown reasons, opt out of achieving proficiency. All affective domains, (motivation, self-esteem, self-confidence, beliefs, attitudes) are associated with personal identity strivings. Students initiate identity work as they begin to think about their competencies and attributes, set short- and long-term goals, and evaluate personal beliefs. Four classes of teacher actions encourage identity development: fostering self-determination, cultivating self-regulation, capitalizing on social goals, establishing an engaging classroom environment.

<b>Session 114</b>	<b>Eagle's Nest B</b>	<b>3:00 - 3:25 PM</b>
<b>Title:</b>	Pre-service Teachers' Conceptual and Procedural Knowledge of Fraction Operations	
<b>Presenters:</b>	Cheng-Yao Lin, Southern Illinois University Carbondale Jerry Becker, Southern Illinois University Carbondale	
<b>Description:</b>	This study examined (a) the differences in pre-service teachers' procedural knowledge in four areas of fraction operations in Taiwan and the United States, (b) the differences in pre-service teachers' conceptual knowledge in four areas of fraction operations in Taiwan and the United States, and (c) correlation in pre-service teachers' conceptual knowledge and procedural knowledge of fractions in Taiwan and the United States. Results indicated that Chinese pre-service teachers performed better in procedural knowledge on fraction operations than American pre-service teachers. No significant differences were found for conceptual knowledge on fraction division.	

<b>Session 115</b>	<b>Royal Palm C</b>	<b>3:00 - 3:25 PM</b>
<b>Title:</b>	Comparison of Self-Reported and Observed Math and Science Teaching Practices	
<b>Presenter:</b>	Jennifer Marsico, Florida Gulf Coast University	
<b>Description:</b>	The session describes the collection and analysis of data on math and science teaching practices as part of a larger research project examining practices of teachers who participated in a multi-year professional development program at Florida Gulf Coast University, titled Project LAUNCH. The goal of the study was to compare the self-reported teaching practices of math and science teachers to observational teaching practice data collected by a researcher. Analysis of the data collected and conclusions are presented, including a summary of the most common teaching methods that were identified by the teachers on the questionnaires and observed by the researcher.	

<b>Session 116</b>	<b>Pelican A</b>	<b>3:00 - 3:25 PM</b>
<b>Title:</b>	Ideas on Effective Lessons from Inservice Teacher Academy	

**Presenters:** Gil Naizer, Texas A&M Commerce  
Becky Sinclair, Texas A&M, Commerce

**Description:** The Math & Science Professional Development Academy is a two year project including 50 pre and inservice teachers. This presentation will focus on participants' ideas about an effective lesson and why it is effective. Qualitative analysis indicated the following themes: lessons must engage students, lessons should use the 5E model, lessons should be inquiry-based, lessons should be interactive/hands on, lessons should be relevant, and lessons should be manageable by the teacher. Additional data from online chat logs, lesson study plans, and teacher efficacy instruments add to the picture of this population as they strive to become better teachers.

**Session 117** **Pelican B** **3:00 - 3:25 PM**

**Title:** Correlated Geology/Space Science & Math PD Findings

**Presenters:** Sandra West, Tx State University - San Marcos  
Sandra Browning, University of Houston, Clear Lake

**Description:** This study is based on a new model of linking science and math, Correlated Science & Math (CSM), in two science led courses, Correlated Geology & Math and Correlated Space Science & Math to a cohort of 10 in-service grades 5-8 math and science teacher teams. Results show teachers (1) increased content knowledge ( $p < .05$ ); (2) adopted integrated approach; (3) adopted inquiry model; (4) reported seeing importance of integration; (5) reported students enjoying both science and math with more hands-on; (6) reported improvement in student performance; (7) attributed improvement in student performance to CSM training. No significant gains in student performance.

**Session 118** **Osprey A** **3:00 - 3:25 PM**

**Title:** Leadership for Educators: Academy for Driving Economic Revitalization in Science (LEADERS)

**Presenter:** Charlene Czerniak, The University of Toledo

**Description:** LEADERS is an NSF funded mathematics and science partnership that gathers and merges the expertise of four essential entities in the economic revitalization of the Great Lakes Region: K-12 school districts, higher education, the renewable energy industry, and informal science education sites. Teacher leaders and district support personnel collaborate with university, industry partners, and informal science programs in the development of Project-Based Science activities (PBS) that unite education with community economic redevelopment. During the summer, teacher leaders complete graduate courses in physics, chemistry, environmental science, engineering, PBS, and teacher leadership. Teacher leaders return to oversee the design and implementation of PBS activities that connect state & national science standards with relevant applications.

**Session 119** **Osprey B** **3:00 - 3:25 PM**

<b>Title:</b>	Equalizing the Learning Game Using Graphic Organizers for Math
<b>Presenter:</b>	Natalia Darling, Raymond Walters College, University Of Cincinnati
<b>Description:</b>	Success with fractions is linked with success in algebra (Brown & Quinn, 2007), so this should heighten concerns regarding assisting students who may struggle with multiple steps, or who may have difficulty retaining information. Since graphic organizers have been used successfully to help English Language learners, as well as students with disabilities (Ives & Hoy, 2003), this presentation focuses on applying graphic organizers to address low performance in math. Discussion will focus on determining teaching entry points, guiding student organization skills, and applying graphical organization of key math procedures to aid students in retaining procedural information.

<b>Session 120</b>	<b>Eagle's Nest A</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	Physics Fun: Teaching Newton's Third Law to Elementary/Middle School Students	
<b>Presenters:</b>	John McBride, University of Texas-Pan American Bhatti Muhammad, University of Texas-Pan American Hannan Mohammad, University of Texas-Pan American	
<b>Description:</b>	<p>The session will proceed as follows:</p> <p>Presenters will provide a rationale for teaching Newton's 3rd law to elementary/middle school students and a pedagogical method involving journaling, for doing so. Participants will engage in a sequence of science activities and journaling activities and will model how to use them to teach Newton's 3rd Law to their students. A handout of science activities and resources for teaching Newton's 3rd Law to elementary children will be provided.</p>	

<b>Session 121</b>	<b>Eagle's Nest B</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	Do You Have a KLEW?	
<b>Presenters:</b>	Linda Figgins, Northern Illinois University Carolyn Riley, Northern Illinois University	
<b>Description:</b>	Presenters will demonstrate the use of the graphic organizer KLEW as a research tool to support the integration science and language arts. The current educational environment often discourages the teaching of science in the elementary school. this strategy supports the sustainability of science because it demonstrates how teachers can include science in their language arts curriculum. The KLEW strategy allows teachers to blend science inquiry and language arts. This hands-on workshop will use shells, fruit and animal fur to model the use of this strategy.	

<b>Session 122</b>		<b>Royal Palm C</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	The Use of the Concept Attainment Model to Teach Abstract Mathematics		
<b>Presenters:</b>	Robert Nichols, Canterbury School Cynthia Baker, Canterbury School		
<b>Description:</b>	This hands-on presentation of the Concept Attainment model will have a learning goal of understanding the nature of the roots of a quadratic equation by examining the discriminant. The Concept Attainment model is an excellent way to teach abstract mathematics using inquiry-based learning. Using this model, students will be able to discover properties of the quadratic function in a manner other than traditional instruction. The results of using this model can increase both short- and long-term learning.		

<b>Session 123</b>		<b>Pelican A</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	Dynamic Geometry Software and Fostering Preservice Teachers' Conjecturing Spirit and Proof Ability		
<b>Presenter:</b>	Zhonghong Jiang, Texas State University - San Marcos		
<b>Description:</b>	This session will introduce a research study on how the use of dynamic geometry (DG) software can foster preservice teachers' conjecturing spirit and proof ability. The study compared effects of utilizing DG software and supporting instructional materials with standard instruction that does not make use of computer exploration/drawing tools. It also explored the cognitive processes that occur during the production of conjectures and proofs in a DG environment.		

<b>Session 124</b>		<b>Pelican B</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	The OTHER end of the Inquiry Continuum		
<b>Presenters:</b>	John Graves, Montana State University Kenneth Miller, Montana State University-Billings		
<b>Description:</b>	Much is made of the guided and open-ended components of the inquiry continuum, but inquiry can also be expository in nature. One way to facilitate high quality inquiry...students posing questions and seeking answers...is through the use of an inquiry case study. This session will allow participants to participate in a case study of Rocky Mountain elk in Yellowstone National Park.		

<b>Session 125</b>		<b>Osprey A</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	Park it and Soar!		
<b>Presenters:</b>	Georgia Cobbs, University of Montana John Park, North Carolina State University		
<b>Description:</b>	We will build gliders and decide what variables effect their flight. We will modify a few variables and if time allows, participants will design and build their own wings.		

<b>Session 126</b>		<b>Osprey B</b>	<b>3:30 - 4:50 PM</b>
<b>Title:</b>	Some Helpful and Some Interesting Programs on Graphing Calculators		
<b>Presenter:</b>	Peggy Moch, Valdosta State University		
<b>Description:</b>	Learn how to do some basic programming on your TI-83/84 (adaptable to other calculators as well). A variety of sample programs will be provided and participants who bring their calculators will be taken step-by-step through the programming process. Programs that help students to practice basic skills as well as attempting to answer the question, "What are all those equations good for?" will be discussed and provided.		

<b>Session 127</b>		<b>Royal Palm A Roundtable</b>	<b>4:00 - 4:50 PM</b>
<b>Title:</b>	<b>Roundtable 7:</b> Preparing Elementary School Teachers in Mathematics Content and Pedagogy: An Open Conversation		
<b>Facilitators:</b>	Ron Zambo, Arizona State University Bill Speer, University of Nevada Las Vegas		
<b>Description:</b>	The researchers used the public data base from the Educational Department in Florida to identify how much contributions of mathematics to high school graduation rate comparing with teachers' degree levels, experiences, salary levels, and students' performance in reading and writing. In addition, researchers also analyzed if those factors listed above affect students' mathematics performance in the state of Florida. The results will help educators identify which factor has the most impact to graduate rate/math scores, how much it impact them, how to predict the graduation rate and how to help students improve their math scores in Florida State.		

<b>Session 128</b>	<b>Royal Palm B Roundtable</b>	<b>4:00 - 4:50 PM</b>
<b>Title:</b>	<b>RoundTable 8:</b> Environmental Education's Role in STEM Education	
<b>Facilitator:</b>	Julie Thomas, Oklahoma State University	
<b>Description:</b>	Environmental Education (EE) is frequently cited for providing context and relevance for science and mathematics content. Quality EE programs provide education regarding current local, national, and international issues that impact lives. Students learn to separate scientific facts and theories from political rhetoric. Discussion will center around the need for EE programs and how they might be sustained at a time when financial resources are low and global environmental issues are significant.	

<b>Friday</b>	<b>Pre-Paid Social Event Dinner at Vester Marine and Environmental Science Research Field Station</b>	<b>5:30 - 9:00 PM</b>
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## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

**Saturday**

**Convention Registration Desk**

**7:30 - 9:00 AM**

**Saturday**

**Breakfast, Keynote, &  
Business Meeting  
Royal Palm Ballroom**

**7:00 - 8:45 AM**

### **Keynote Speaker: Peter Blaze Corcoran**



Peter Blaze Corcoran is Professor of Environmental Studies and Environmental Education at Florida Gulf Coast University, where he serves as Director of the Center for Environmental and Sustainability Education. He has been a faculty member at College of the Atlantic, Swarthmore College, and Bates College, and a visiting professor in Australia, The Netherlands, and Fiji. Currently, he serves as a visiting professor at the Science University of Malaysia attached to the Centre for Global Sustainability Studies. Peter works extensively on international environmental education, with special interest in the South Pacific Island Nations. He is among the founders of the Global Higher Education for Sustainability Partnership and is Past President of the North American Association for Environmental Education. He served as Senior Fellow in Education for Sustainability at University Leaders for a Sustainable Future and is a Senior Advisor to Earth Charter International in San Jose, Costa Rica.





## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

# Saturday Sessions 9:00 AM – 1:00 PM

**Session 129**

**Six Mile Cypress Slough**

**9:00 AM – 1:00 PM**

**Title:** Wet Walk in the Six Mile Cypress Slough

**Facilitators:** Dr. John Miller, Marine Biology Teacher  
Sue Miller, Biology Teacher  
School District of Lee County



Participants will walk through this beautiful slough filled with Cypress trees and diverse populations of plants and animals, including some rare and listed species. The slough provides natural drainage for the area, collecting runoff water from a 33 square-mile watershed.

**Session 130**

**J. N. "Ding" Darling  
National Wildlife Refuge**

**9:00 AM – 1:00 PM**

**Title:** J. N. "Ding" Darling National Wildlife Refuge Tour

**Facilitator:** Dr. Jerome Jackson, Professor and Ornithologist  
Florida Gulf Coast University



The refuge is part of the largest undeveloped mangrove ecosystem in the United States. It was created to safeguard and enhance the pristine wildlife habitat of Sanibel Island, to protect endangered and threatened species, and to provide feeding, nesting, and roosting areas for migratory birds. Today, the refuge provides important habitat to over 220 species of birds.

**Session 131****CREW****9:00 AM – 1:00 PM****Title:** **Corkscrew Regional Ecosystem Watershed (CREW) Hike****Facilitator:** **Brenda Brooks, Director of Education  
Corkscrew Regional Ecosystem Watershed**

Home to many rare and endangered animals this autumn hike should be a pleasant easy walk along well maintained flat trails that include some board walk and a marsh overlook. Trails and boardwalks will take visitors through pine flatwoods, an oak hammock, a popash slough, and provide a view the marsh from an overlook.

**Session 132****Holiday Inn  
Pelican A & B****9:00 AM – 1:00 PM****Title:** **STEM Summit****Facilitator:** **Carla Johnson, Associate Professor  
University of Cincinnati**

This session will engage the membership of SSMA in a discussion with national leaders engaged in STEM work from leading organizations that have a vested interest in STEM focused on national policy, research, and practice in this area. SSMA is poised to take a leadership role in the arena of STEM. This Summit will begin a conversation within the organization about the STEM talent crisis, the promise of integration of STEM subjects to address issues grounded in the real-world and suggestions for innovative approaches to practice.

**Saturday****Lunch  
Royal Palm Ballroom****1:00 – 2:00 PM**



## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

**Saturday**

**Optional  
Bus Transportation  
to Fort Myers Beach**

**2:00 - 10:00 PM**

*Departure: Bus to Fort Myers Beach departs the convention hotel at 2:00 PM and 5:00 PM*

*Return: Bus departs from Times Square on Fort Myers Beach at 5:30 PM and 9:30 PM*



*Photo: Shopping & Dining on the Beach*



*Photo: Sunset on the Beach*

**Saturday**

**Board Meeting  
Eagle's Nest A & B**

**3:30 - 11:30 PM**

## Saturday

## On Your Own Other Things To Do in the Area

### **5-20 minutes from Hotel:**

- FGCU Campus (5 minutes from hotel) [www.fgcu.edu](http://www.fgcu.edu)
- Boardwalk at Six Mile Cypress Preserve (20 minutes from hotel) <http://www.leeparks.org/sixmile/>
- Koreshan State Historic Site (15 minutes from hotel) <http://www.stateparks.com/koreshan.html>

### **20-50 minutes from Hotel:**

- Corkscrew Swamp Sanctuary (30 minutes from hotel): <http://www.corkscrew.audubon.org/>
- Lover's Key State Recreation Area – beach, canoeing, fishing (40 minutes from hotel) <http://www.floridastateparks.org/loverskey/default.cfm>
- Naples Botanical Garden (40 minutes from hotel) <http://www.naplesgarden.org/>
- Edison Home & Laboratory (Downtown Fort Myers - 30 minutes from hotel) <http://www.efwefla.org/>
- Butterfly Estates (Downtown Fort Myers – 30 minutes from hotel) <http://thebutterflyestates.com/public/welcome.asp>
- Lake Trafford – air boat ride (40 minutes from hotel) <http://www.laketrafford.com/>
- Ding Darling National Wildlife Refuge – birding (on Sanibel Island - 40 minutes) <http://www.fws.gov/dingdarling/>
- Sanibel and Captiva – beaches, dining, shopping (40 minutes from hotel) <http://www.sanibel-captiva.org/islands/index.asp>
- ECHO: Educational Concerns for Hunger Organization (40 minutes from hotel) <http://www.echonet.org/>

### **An hour or more from the Hotel but worth the trip:**

- Shark Valley Tram Ride (in Everglades National Park) <http://www.sharkvalleytramtours.com/>
- Clyde Butcher Galleries (near Everglades National Park) <http://www.clydebutcher.com/clyde-butcher-galleries.cfm>
- Everglades City Rod and Gun Club <http://www.evergladesrodandgun.com/>
- Fakahatchee Strand Preserve State Park (60 minutes from hotel) <http://www.floridastateparks.org/fakahatcheestrand/>
- Cayo Costa State Park (60 minute drive then ferry ride to the island) <http://www.floridastateparks.org/cayocosta/>
- Myakka River State Park (60-75 minutes from hotel) <http://www.myakkariver.org/>

### **Shopping Malls in the vicinity of the hotel**

- Gulf Coast Town Center (Across the street from hotel) <http://www.gulfcoasttowncenter.com/shop/gulf.nsf/index>
- Miromar Outlet Mall (5 minutes from the hotel) <http://www.miromaroutlets.com/>
- Coconut Point Shopping Mall (15 minutes from hotel) <http://www.simon.com/mall/default.aspx?id=1202>

# SSMA COMMITTEES

## Awards and Endowment

Alfinio Flores, Chair	2007-2010
Zhonghe Wu, Chair	2010-2013
1. Diana Leggett	2007-2010
2. Colleen Eddy	2008-2011
3. Stacy Reeder	2008-2011
4. Linda Figgins	2008-2011
5. Elaine Tuft	2009-2012
6. Mary Sowder	2009-2012

## Conventions

Diane Schmidt, Chair	2008-2011
1. John Park	2007-2010
2. Melanie Shores	2008-2011
3. Susan Cooper	2009-2012
4. Shelia Pirkle	2009-2012
5. Ann Rethlesen	2009-2012
6. Julie Angle	2009-2012
7. Cheng-Yao Lin	2009-2012
8. Kathy Mittag	2010-2013
Juliana Utley, Ex-Officio	

## Finance

Don Balka, Chair	2009-2010
Alan Zollman, Chair	2010-2011
1. Richard Kozoll	2007-2010
2. Zhonghe Wu	2007-2010
3. Juliana Utley	2008-2011
4. Margaret Mohr	2008-2011
5. Carolyn Riley	2009-2012
6. Tricia Kerr	2009-2012
Julie Thomas, Ex-Officio	

## Membership

Catherine Kelly, Chair	2008-2011
1. Fenqjen Luo	2007-2010
2. Sarah J. Ramsey	2007-2010
3. Robert Cappetta	2008-2011
4. Angelina Powell	2008-2011
5. Melissa A. Mitchell	2009-2012
6. Helen P. Gerretson	2009-2012

## Nomination and Election

Georgia Cobbs, Chair	2009-2012
1. Ron Zambo	2007-2010
2. Debra White	2007-2010
3. Dixie Metheny	2008-2011
4. Vicki Schell	2008-2011
5. Charles Emenaker	2008-2011
6. Kevin Wise	2009-2012
Lynn Columba	2010-2013

## Policy

John Park, Chair	2007-2010
Ron Zambo, Chair	2010-2013
1. Bobby J. Jeanpierre	2007-2010
2. Peggy Moch	2007-2010
3. Suzanne Nesmith	2008-2011
4. Bob Drake	2008-2011
5. Jim Telese	2008-2011
6. Pat Lamphere-Jordan	2009-2012
Alan Zollman, Ex-Officio	
Don Balka, Ex-Officio	

## Publications

Carla Johnson, Chair	2009-2012
1. Juliana Utley	2007-2010
2. Mary Atwater	2007-2010
3. Bharath Sriraman	2008-2011
4. Trena Wilkerson	2008-2011
5. Lynn Columba	2008-2011
6. Judy Beauford	2009-2012
7. Linda Zientak	2010-2013
Gilbert Naizer, Ex-Officio	Newsletter Editor
Gerald Kulm, Ex-Officio	SSMA Journal Editor



## 2010 Annual Convention

Focus on Sustainability: STEM Education and Coastal Environments

### Presenters' Contact Information

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