



*School Science and Mathematics Association
November 8-10, 2012*





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Welcome to the 111th Annual Convention of the School Science and Mathematics Association (SSMA)!

On behalf of the Board of Directors of School Science and Mathematics Association, I welcome you to the 2012 Annual Convention. We are an international organization that continues to nurture new researchers and practitioners through our meetings. We continue to have participation from outside North America.

The activities of SSMA are defined by four goals:

1. To build and sustain a community of educators and researchers in STEM fields.
2. To advance knowledge through research in science and mathematics education, and in their integration and application in the real world.
3. To inform practice through the dissemination of scholarly works in science and mathematics, in our journal, *School Science and Mathematics*.
4. To influence policy in science and mathematics education at all levels of government.

Since we last met in Colorado Springs, the SSMA Board has:

- Responded favorably to the STEM report of the President's Council of Advisors for Science and Technology (PCAST).
- Initiated efforts to increase the Endowment Fund in an effort to provide for awards and travel grants.
- Moved forward with plans for future conventions in 2013 (San Antonio) and 2014 (Savannah).
- Approved a budget for 2012 – 2013.
- Participated in the Triangle Coalition Conference on STEM education in Arlington, VA.

As you involve yourself in the convention, please show professional courtesy to our presenters and to other members by attending sessions, muting phones, and being supportive.

In celebrating 111 years of existence, please extend invitations to your new and experienced science and mathematics colleagues to join us. For the past 110 years, many of the most distinguished mathematics and science educators have been members of SSMA, have given their first presentations of research at our conventions, and had their first manuscripts published in our journal, *School Science and Mathematics*.

Enjoy your time in Birmingham as you network with friends and new acquaintances in your field.

Don S. Balka
SSMA President



A special welcome from the University of Alabama Birmingham and the School of Education

It is my honor and pleasure to have the opportunity to welcome you to the 2012 Annual Convention of the School Science and Mathematics Association! We are excited to be able to host you here in Birmingham. As an educator, I recognize the critical importance of SSMA's mission to promote research-based innovations related to K-16 teacher preparation and continued professional enhancement in science and mathematics. As dean of our School of Education at the University of Alabama at Birmingham, this is a mission that I can truly say that we embrace at our institution. We are proud to be allied with SSMA in achieving these goals.

This year's SSMA convention theme, E-Merging Math and Science, is a provocative and timely one that I'm confident will be engaging for all. As we move forward into a brave new world, filled with new technologies emerging on almost a daily basis, we are challenged as educators to integrate these new technologies into the way that we conceptualize and deliver science and mathematics instruction in today's classrooms. We, indeed, are in the midst of a very exciting and challenging time in the field.

The program chair for this convention, Dr. Melanie Shores, and her committee have done an outstanding job of organizing a program filled with cutting-edge presentations and other excellent opportunities for professional enhancement. After participating in this convention, I'm sure you will be professionally re-energized and armed with fresh and innovative ideas that you can begin implementing as soon as you return home.

Again, thanks for your participation. We are delighted that you are here!

Deborah Voltz
Dean
School of Education





Special thanks to:

Organizational Sponsors

- **Bishop, Colvin, Johnson & Kent, LLC**
- **City of Birmingham, Ms. April Odom**
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- **UAB, School of Education, Dean Deborah Voltz**
- **UAB, School of Education, Department of Human Studies, Dr. Kristi Meaner**
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- School of Education Student Volunteers
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- Dr. Stephen Barnes
- Ms. Karen Wood, AMSTI
- Dr. Ann Dominick
- UAB School of Education Deans Office
- UAB School of Education, Project UTEP

Local Planning Committee Members

- **Tommy Smith, Co-Chair, UAB School of Education**
- **Almir Smajic, Co-Chair, The University of Montevallo**
- Joseph Burns, UAB School of Education
- David Radford, UAB School of Education
- Jeremy Zelkowski, University of Alabama
- Beverly Radford, UAB School of Education
- Jaronda Little, Alabama School of Fine Arts
- Joan Dawson, UAB School of Education
- John Mayer, UAB, Department of Mathematics
- Lee Meadows, UAB School of Education
- J. Michael Wyss, Director, Center for Outreach Development (CORD)

Convention Overview: Thursday-Saturday

Thursday November 8	
8:00AM – 5:00PM	Registration
8:30AM – 9:20AM	Opening Session: Keynote Speaker, Constance Kamii
9:30AM - 11:55AM	Breakout Sessions
12:00PM – 12:55PM	Lunch on your own
1:00PM – 5:00PM	Breakout Sessions
5:05PM - 5:50PM	Committee Meetings
6:30PM	Reception and SSMA Awards

Friday November 9	
8:00AM – 5:00PM	Registration
8:15AM – 9:20AM	Business Meeting
9:30AM – 11:55AM	Breakout Sessions
12:00 PM – 1:20PM	Lunch & Keynote Speaker: Larry DeLucas
1:30PM – 5:00PM	Breakout Sessions
5:05PM – 5:50PM	Committee Meetings
5:30PM-9:30PM	McWane Science Center (Optional Fee)

Saturday November 10	
7:30AM – 1:00PM	Registration
8:00AM – 11:25AM	Breakout & Workshop Sessions
11:30AM – 12:50PM	Working (Boxed) Lunch Roundtable and Poster Session
1:00PM – 2:30PM	Workshop Sessions
3:30PM – 5:30PM	Barber Motor Sports Park & Museum (Optional Fee)



2012 Annual Convention: Birmingham, AL
E-Merging Math & Science

**Thursday Morning Sessions
November 8, 2012**

Opening Session & Keynote Speaker	East Meeting Room: MH	8:30 – 9:20 AM
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Opening Remarks

- Don Balka, President, SSMA

Welcome from University of Alabama Birmingham

- Ann Dominick
Assistant Professor
Curriculum and Instruction
School of Education, College of Arts and Sciences
University of Alabama at Birmingham



Constance Kamii and world-renowned Swiss psychologist Jean Piaget working with schoolchildren in Ypsilanti, Michigan, in the 1960s

Constance Kamii was born in Geneva, Switzerland, and attended elementary school there and in Japan. She finished high school in Los Angeles, attended Pomona College, and received her Ph.D. in education and psychology from the University of Michigan.

She is now professor of early childhood education at the University of Alabama at Birmingham. A major concern of hers since her work on the Perry Preschool Project in the 1960s has been the conceptualization of goals and objectives for early childhood education on the basis of a scientific theory explaining children’s sociomoral and intellectual development. Convinced that the only theory in existence that explains this development from the first day of life to adolescence was that of Jean Piaget, she studied under him on and off for 15 years.

When she was not studying under Piaget in Geneva, she worked closely with teachers in the United States to develop practical ways of using his theory in classrooms. The outcome of this classroom research can be seen in *Physical Knowledge in Preschool Education* and *Group Games in Early Education*, which she wrote with Rheta DeVries. Since 1980, she has been extending this curriculum research to the primary grades and wrote *Young Children Reinvent Arithmetic* (about first grade), *Young Children Continue to Reinvent Arithmetic, 2nd Grade*, and *Young Children Continue to Reinvent Arithmetic, 3rd Grade*. In all these books, she emphasized the long-range, over-all aim of education envisioned by Piaget, which is children’s development of sociomoral and intellectual autonomy.

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Thursday				
November 8, 2012				
9:30AM-9:55AM				
E	Subramaniam, Karthigeyan; Harrell, Pamela; Wojnowski, David; & Shaker, Ziad	<p>Concept Maps as Assessment Tools for Identifying Pre-Service Teachers' Conceptions of Density.</p> <p>This presentation focuses on the use of concept maps for assessing and identifying pre-service teachers' conceptions of density. The study was framed by the literature on Concept Mapping and by an integrated theoretical framework consisting of Conceptual Change Theory, and Vygotsky's Construct of Concept Formation. Analysis revealed that pre-service teachers' conceptions for density were centered on confusing the idea of density with the concepts of mass and volume and specifically, with buoyancy, sinking and floating. Implications include the need to develop science teacher preparation programs with an emphasis on quality instructional intervention that impact future science teaching practices.</p>	25 MIN	Research Presentation
F	Zollman, Alan	<p>The 3 S's for Success: STEM Education Projects in the US</p> <p>This study sought to identify characteristics of STEM education professional development that help teachers transform content knowledge and pedagogical skills into their teaching. What was found was that successful STEM professional developments share the three characteristics of good professional development: (1) strong focus on developing teacher knowledge of and ability to teach the subject matter; (2) a solid relevancy to the teacher's classroom situation; and 3) an intensive, sustained duration for the professional development.</p>	25 MIN	Research Presentation
G	Clary, Renee; Tucker, Deborah L.; Dunne, James; Saebo, Svein; Beard, Debbie; Elder, Anastasia; & Wax, Charles	<p>TANS: Blended Professional Development Demonstrates Effectiveness for Middle School Science Teachers</p> <p>The Teacher Academy in the Natural Sciences (TANS) uses blended (online and face-to-face) learning for Mississippi middle school science teachers (grades 6-8), targeting chemistry, geosciences, and physics. TANS teachers receive intensive instruction in one scientific discipline per year over three years. Teachers participate in an intensive 2-week summer institute, three academic-year sessions, online content instruction, and faculty co-teaching, and they provide professional development for their peers. Pre/post assessments include traditional, non-traditional, and technology-based tools. Data revealed significant improvement ($p < 0.001$, repeated t-test) with medium to large effect sizes (Cohen's $d > 0.8$) for science content pre/posttests.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
I	Angle, Julie; French, Donald P.; Ivey, Toni; Shaw, Ed; & Thomas, Julie	<p>The influence of a national lab day event on students concepts of research</p> <p>The National Lab Day (NLD) initiative encourages local communities of STEM researchers and educators to promote STEM studies. Oklahoma State University Faculty in the Colleges of Education, and Arts & Sciences have organized such NLD events for three years. These events provide an opportunity for teachers and students to visit our university campus, learn about current science research, and engage in science activities with STEM researchers. This session will elaborate on the ways in which teachers and students have developed deeper understanding of current science research and more explicit ideas about the work of STEM researchers.</p>	25 MIN	Research Presentation
J	Conrady, Kansas	<p>Using Journals to Promote Metacognitive Development in a Mathematics Content Course</p> <p>Carefully designed classroom activities can be used to promote metacognitive thinking and awareness, which tends to lead to greater success in mathematics. As a part of regular course requirements, students were asked to maintain a semester-long journal using the Interactive Science Notebook format. A qualitative analysis was conducted on student's early semester journal entries in comparison to late semester journal entries along with a separate analysis on student reflections of their overall journal experience. Findings will discuss changes in student's awareness of their thinking and their perceived value of the journal to help record thought processes.</p>	25 MIN	Research Presentation
K	Johnson, Carla; Harkness, Shelly; Milner, Andrea; & Waldron, Tammy	<p>Publishing in the School Science and Mathematics Journal</p> <p>This session will provide an overview of the process of submitting an empirical research article to the SSM Journal. Tips to improve chances of acceptance will be shared.</p>	25 MIN	Research Presentation
L	Peterson, Cheryl Ann; Stuessy, Carol	<p>Students' online inquiry engagement: Using optimal examples to inform best practices</p> <p>Web 2.0 technologies supported students' authentic inquiry experiences in an online-mentored inquiry platform developed by a scientific society. The platform enabled students to engage and interact with others, including scientist mentors, in authentic scientific practices. The Online Elements of Inquiry Checklist was used to evaluate online interactions of students. During this session we will share the results of the students who provided the most evidence of quality engagement online. We will then discuss the implications of these results for mentoring practice and changes to the inquiry platform.</p>	25 MIN	Research Presentation

Thursday

10:00AM-10:55AM

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
D	Mohr-Schroeder, Margaret; Jackson, Christa; Little, David III; & Schroeder, D. Craig	<p>See Blue Mathematics Outreach Initiative: Tapping the potential of struggling learners</p> <p>The University of Kentucky Mathematics Outreach Initiative is a resource to the University and surrounding communities. The goal of the clinic is to provide free outreach support for middle and high school students who are struggling with mathematics. In this session, we will address instructor perceptions of struggling mathematics students, how the clinic has impacted student achievement, and College & Career Readiness.</p>	50 MIN	Regular Presentation
F	Park, John	<p>Hollywood Science: Using scenes from movies to promote inquiry</p> <p>Clips from movies can be used to engage students in a science topic, used as an object of analysis, and used as a tool to motivate students. Measurements can be made within the clips to explore mathematical relationships in the movies. Sample lessons will be presented during this session.</p>	50 MIN	Regular Presentation
I	Berlin, Donna	<p>Place-Based Education: Using Community and Culture to Teach Science and Mathematics</p> <p>Place-based education provides opportunities to develop student science and mathematics knowledge, skills, and dispositions embedded within authentic, relevant, and meaningful real-world experiences. Specific to student community, culture, background, and vocabulary, these experiences can build and deepen teacher and student understandings of and respect for local community and cultural practices and values. Science and mathematics education are naturally and logically integrated in place-based experiences. Aligned with science and mathematics curricular standards, examples of place-based scientific and mathematical experiences relevant to students in Alabama will be described as models that can be generalized to different areas of the world and diverse populations.</p>	50 MIN	Regular Presentation
K	Moseley, L. Jeneva; Cady, Jo Ann; Cozad, Kris	<p>The Effectiveness of Analyzing Correct versus Incorrect Student Work Samples and Impact on Mathematical Proficiency</p> <p>Calculus students were randomly assigned to two groups: one analyzing correct student work samples and one analyzing incorrect student work samples. What difference, if any, exists between groups in determining correct solutions to problems similar to the work samples analyzed, in whether they replicate errors similar to the incorrect work samples, and in perceptions of how the analyses of student work samples increase understanding? Also, how do students describe their experiences of analyzing student work samples? Data from enrollees in 10 sections of Basic Calculus at a large university will be analyzed using ANCOVA, ANOVA, and inductive analysis (Hatch, 2002).</p>	50 MIN	Regular Presentation

Thursday

10:00AM-10:25AM

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
E	Covert, Joe; & Baldwin, Paul	<p>Identifying the essential elements of an elementary school science lesson Inquiry-based approaches to teaching science have been endorsed by national science organizations for over twenty years and emphasized in state K-12</p>	25 MIN	Research Presentation
G	Ivey, Toni; & Stuessy, Carol	<p>Looking at Science Teacher Induction through a Learning Sciences Lens Principals often expect beginning science teachers to teach with the expertise of more experienced teachers. Induction programs typically focus on general school policies and procedures. As such, many schools induction programs neglect the content-specific learning needs of beginning science teachers. It is important that optimal learning environments are created for beginning science teachers. Informed by the How People Learn (HPL) Framework, this session present our vision of what science teacher induction programs might look like that are knowledge, learner, assessment, and community centered.</p>	25 MIN	Research Presentation
J	West, Sandra; & Browning, Sandra	<p>Correlated Science and Mathematics This presentation describes the evaluation of a professional development (PD) model called Correlated Science and Mathematics (CSM) for its effectiveness in enabling grades 5-8 teachers to integrate science and mathematics curriculum and to use the proper language of each discipline. Although national standards recommend integration, without effective PD models, broad-scale integration is not likely to occur. The implementation of the critical attributes of the CSM PD model was effective in enabling teachers to effectively plan and teach integrated science and mathematics lessons as demonstrated in classroom observations and lesson plans.</p>	25 MIN	Research Presentation
L	Roy, George; Fueyo, Vivian; Vanover, Charles; Unal, Zafer; & Vahey, Phillip	<p>Supporting Middle School Mathematics Teachers: A Curricular Activity System used in an Urban School District During this research presentation, we will describe our efforts comprising a curricular activity system aimed at scaling middle school teachers' implementation of a curriculum that integrates technology to teach key mathematics concepts identified by the Common Core State Standards for Mathematics. Elements of the curriculum activity system include: (a) cognitively demanding learning modules aligned with the Common Core that serve as textbook replacement modules; (b) dynamic technology emphasizing mathematical representations; and (c) focused teacher professional development exploring the coordination of technology with a well-defined curriculum. Findings will be described through student learning gains, changes in teacher practice, and district change.</p>	25 MIN	Research Presentation

Thursday 10:30AM-10:55AM

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
E	Millman, Richard S.	<p>Self-Efficacy Beliefs of Gifted Students in a Proof Centered Number Theory Course</p> <p>In this study we investigated self-efficacy beliefs and self-regulation strategies of gifted high school students enrolled in an advanced course in proofs and problems in number theory and algebra. Throughout the course, students were expected to engage in higher order mathematical thinking, an expectation different from what students experienced in other math courses that were more content-specific. Prior research indicates self-efficacy affects goal setting and perseverance particularly when students are faced with a difficult task which can also affect achievement. Thus, we examined student's pre- and post-course self-efficacy and self-regulation, supplementing quantitative findings with results from qualitative student interviews.</p>	25 MIN	Research Presentation
G	Figgins, Linda; & Riley, Carolyn	<p>Four Elementary Teachers' Journeys into the Understanding and Application of Mathematical Proficiency</p> <p>This session will provide the opportunity for Dr. Linda Figgins to share the analysis of her research involving 4 case studies which investigated the teachers' understanding and application of mathematical proficiency. The purpose of this study was to examine elementary teachers' perceptions of how mathematical proficiency was cultivated in themselves and in their students.</p>	25 MIN	Research Presentation
J	Utley, Juliana; & Reeder, Stacy	<p>Peyton walked 7/8 of a mile: Examining Pre-Service Elementary Teachers' Fraction Scenarios</p> <p>Pre-service elementary teachers were asked to develop a fraction scenario or story that would be likely to elicit a particular operation with fractions. Research examining these scenarios will be presented. Additionally, an overview of the activities and experiences provided for pre-service elementary teachers related to fraction number sense in a 4th through 8th grade mathematics methods course will also be shared.</p>	25 MIN	Research Presentation
L	Scogin, Stephen	<p>Increasing Student Motivation and Engagement in Science</p> <p>Students who have poor classroom science experiences often get the impression that careers in science are extremely boring and unfulfilling. The decreasing number of students choosing STEM fields is reflective of this trend. This study examined the implementation of a technology-enhanced, inquiry-based program for junior and high school science in different classrooms around the country. The program engages students in a genuine science experience by utilizing live plants in the classroom and linking students with practicing scientists in an authentic online mentorship. Preliminary results indicate the program increases student enthusiasm for science.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Thursday 11:00AM-11:55AM				
E	Evans, Brian	<p>History of Mathematics in the Classroom: A Focus on Cultures</p> <p>This presentation gives a brief overview of the history of mathematics through the contributions from various cultures. It provides ideas for using mathematics history to motivate students. The presentation will be interactive and have teachers solve historical problems and we will discuss how mathematics history can be used in the classroom. Topics will briefly include mathematics in ancient Egypt, ancient Mesopotamia, ancient Greece, China, India, the Islamic World, the Pre-Columbian Americas, Europe, and the United States. The development of mathematics from ancient times, the Middle Ages, and throughout the 17th to 21st Centuries will be briefly examined.</p>	50 MIN	Regular Presentation
G	Colston, Nicole	<p>The Influence and Role of Climate Denial on Public School Policy</p> <p>Climate denial campaigns use skepticism to politicize and delegitimize science, engendering questions about how to manage climate literacy education in the face of public controversy. A recent Science magazine article explains how the U.S. political debate about the uncertainty of climate change has extended to our K-12 science classrooms. To date, there are very few studies addressing the climate denial communication which surrounds climate change education and research initiatives. This presentation introduces the political and argumentative strategies of climate skeptics, drawing out lessons which will help parents and teachers respond to manufactured controversy in their school systems.</p>	50 MIN	Regular Presentation
J	Barrow, Lloyd	<p>Job potential for math and science education faculty positions</p> <p>The session will analyze mathematics education and science education faculty positions that were posted during the 2011-12 academic year. An overview of positions of earlier years has shown an increased number of postings after several years of declining numbers. Currently, there are approximately twice as many mathematics education positions as science education positions that were posted. This presentation will provide a suggested plan and preparing for a position search. Includes selecting the types of positions, coursework to broaden perspective, telephone interview, This interview, negotiating an offer, etc. each stage of the employment search requires a thought out approach. Applicants must decide what type of institution would be best suited for them. The focus of the session will be to assist individuals in preparing for this first faculty position.</p>	50 MIN	Regular Presentation
Thursday 11:00AM-11:25AM				

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
D	Ivey, Toni; Graves, Cathy, & Thomas, Julie	<p>The Extraction of Geosciences from the High School Science Curriculum: A Fractured and Friable Policy Many school curricula across the nation marginalize the geosciences: few high school students take an Earth Science course and only about a third of teachers assigned to those courses hold an Earth Science teaching certificate. Very few states require an ESS course as a graduation requirement for high school students (i.e., New York) and most do not. As a result, few ESS courses are offered to students and few teachers have expertise in ESS. The purpose of this session is to examine states written policy on the teaching of the Earth sciences in the high school classroom.</p>	25 MIN	Research Presentation
F	Laubach, Timothy; & Reeder, Stacy	<p>Infusing Inquiry into Elementary School Science: The Effects of a Mathematics and Science Partnership Grant on Teaching Self-Efficacy Fifty elementary teachers participated in a year-long inquiry science project. During a ten-day summer institute, ten teacher learning communities collaborated with life scientists to answer scientific research questions and with science educators to experience inquiry pedagogy activities. Outcomes of the summer institute included a video presentation of the life science research project and inquiry science lessons that were implemented during the following school year. Teaching self-efficacy was measured immediately before and after the summer institute and again at the end of the following school year. The results of this study will be shared.</p>	25 MIN	Research Presentation
I	Liu, Fuchang	<p>Mathematics Anxiety and Science Anxiety as Perceived by Pre-Service Elementary Teachers Twenty nine pre-service elementary teachers were interviewed on their perceptions concerning mathematics and science anxiety and anxieties towards their future teaching. It was found that participants regarded mathematics and science anxiety as closely correlated with anxieties towards teaching these subjects, and that the reasons for such anxiety had to do with their personal feelings, content material, and their own teachers' lack of understanding. Furthermore, the majority of the participants admitted that they had intense mathematics or science anxiety but at the same time realized the importance of not passing anxiety to their students.</p>	25 MIN	Research Presentation
L	Wuebker, Megan; & Surrette, Timothy	<p>Assessing the ability of an online environment to provide effective professional development to teachers This presentation examined the ability of an online environment to: (1) deliver the critical features of teacher professional development identified in Desimone (2009) and (2) support the principles of adult learning outlined in Knowles (1973).</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Thursday 11:30AM-11:55AM				
F	Sahin, Alpaslan; Akgun, Ozcan Erkan; Erdogan, Niyazi; & Cavlazoglu, Baki	<p>The Students on the Stage: Results of a New Model to Engage Students in a Successful Afterschool STEM Program</p> <p>The qualitative case study was employed to investigate how a high school physics teacher successfully engages students in an afterschool STEM program. We also examined the factors supporting students' willingness and motivation to pursue that program as well as the benefits students gain from their experience. Data were gathered by conducting interviews with the teacher and twelve students separately in addition to classroom observations of the afterschool STEM program instruction. Preliminary analyses revealed that the teacher's actions functioned as scaffolds for engaging students played a key role. These actions can be classified and described and promise to offer a new approach for STEM teaching. The study attempted to define key elements and components on the stage learning.</p>	25 MIN	Research Presentation
I	Thompson, Tony	<p>Algebra I teachers' perceptions of inclusion</p> <p>This research investigated Algebra I teachers' perceptions and knowledge of teaching students with learning disabilities (SLD). A Likert-scale survey developed by the researcher was completed by 85 Algebra I teachers in 2 states in the southeastern US. Algebra I teachers reported that they: (a) do not have the time or support needed to be successful teaching SLD; (b) feel SLD are not prepared for Algebra I and negatively impact the achievement of other students; and (c) do not often use best practices for teaching SLD (e.g., manipulatives, calculators). Demographic variability in responses will be discussed.</p>	25 MIN	Research Presentation
K	Harkness, Shelly; Johnson, Carla; Milner, Andrea; & Waldron, Tammy	<p>Serving as a Reviewer for the School Science and Mathematics Journal</p> <p>This session is designed to provide an overview of the review process for assessing articles submitted to the SSM Journal. Current and potential new reviewers are welcome to attend.</p>	25 MIN	Research Presentation
L	Moseley, L. Jeneva	<p>Teaching Mathematics Using Children's Books</p> <p>Young readers are often exposed to subjects such as culture, language, and history while reading popular titles; however, mathematical ideas are less frequently represented in children's literature. This presentation will highlight ways to use children's literature to motivate mathematics in the classroom.</p>	25 MIN	Research Presentation
Thursday 12:00PM-12:50PM				
	Lunch	Lunch On Your Own		

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Thursday 1:00PM-1:55PM				
L	Brandon, Bramsic; & Mueller-Trongone, Patricia	<p>Increasing Success Without Lowering Expectations In STEM</p> <p>With increasing pressure from the outside, education has started to turn its focus from the children and redirected it solely to grades and statistics. As a result, lowered expectations are now appearing in schools nationwide and the goals have turned to passing tests and attaining certain grades instead of preparing them for the future. Westbury Public Schools, a high needs New York school district, has created a STEM Academy that addresses all mandates while offering an authentic educational experience with high expectations. Through a partnership with the Cradle of Aviation Museum, Adelphi University, and various instructions, Westbury has created a Physics First Program with phenomenal results.</p>	50 MIN	Regular Presentation
MH	Ricks, Steve; & Wood, Karen	<p>Alabama Math, Science, and Technology Initiative (AMSTI)</p>	50 MIN	Regular Presentation
Thursday 1:00PM-1:25PM				
D	Adams, Cindy	<p>Using Writing as a Way to Measure Critical Thinking in Biology Courses</p> <p>There is mounting pressure today to teach more higher-order thinking skills in order to enhance our collective ability to understand key issues and solve global problems. Yet assessing the development of these skills continues to be a challenge. This session will explore the validity of using written analyses of scientific papers as a way to measure the effectiveness of three different classroom methods (classroom response systems vs. discussions vs. written instruction) in enhancing critical thinking skills in introductory biology classes for both science majors and non-science majors. Both quantitative and qualitative data will be presented.</p>	25 MIN	Research Presentation
E	James, Wendy	<p>The Vectors of Trigonometry Verses the Vectors of Physics</p> <p>Physics instructors often mention they need to teach the math along with the physics. To investigate why this might happen, this study investigates the topic of vectors as taught in both a trigonometry and physics course. The analysis compares the instruction concerning how vectors are defined and used during instruction.</p>	25 MIN	Research Presentation
F	Clary, Renee; & Wandersee, James	<p>Local gravel samples provide an inexpensive resource for multiple STEM inquiry investigations and critical thinking activities!</p> <p>Our in-service teachers identified several opportunities to use this economical resource to address multiple interdisciplinary STEM constructs. Not only can students sort and classify gravel, but further investigations can determine the degree of weathering, erosion, and transportation, and processes by which samples are mined. Students can extend investigations of gravel use in construction, erosion control, and manufacture, and develop engineering experiments to determine which gravels are better suited for commercial applications such as paving and filtration. Fossil investigations are also possible with some gravel!</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
G	Kent, Chatoria; & Lampley, Sandra	<p>Can NASA Educational Resources Transition into the Next Generation Science Standards?</p> <p>NASA has developed an extensive collection of high quality Teaching Materials for K-12 teachers designed to educate and motivate students in science, technology, engineering, and mathematics (STEM) disciplines. These NASA educational materials have been found to have strong connections and applicability to the National Science Standards and the potential to transition easily into the Next Generation of Science Standards as well. This presentation focuses on best practices for effectively integrating materials from this collection into a high school biology course. In particular, the presentation will focus on NASA materials which are inquiry-based, use the engineering design process, and/or embed mathematics content.</p>	25 MIN	Research Presentation
I	Evans, Brian	<p>Problem Solving Abilities and Perceptions in Alternative Certification Mathematics Teachers</p> <p>The purpose of this study was to understand alternative certification middle and high school teacher's mathematical problem solving abilities and perceptions. Participants were given a problem solving examination and required to reflect upon their students and their own problem solving. Findings revealed there was a significant improvement in problem solving abilities for the teachers over the course of the semester, and there was a direct correlation between content knowledge and problem solving ability. Teachers perceived their students problem solving abilities as generally weak due to not understanding how to start a problem, lack of persistence, and poor literacy skills.</p>	25 MIN	Research Presentation
J	Sahin, Alpaslan; Ayse Tugba Oner; & Capraro, Robert	<p>Examining the effects of the TEXAS Statewide STEM Initiative: Did T-STEM academies achieve important results?</p> <p>The purpose of this study is to determine how well T-STEM academies did in the state of Texas. There were 51 T-STEM academies in 2010-2011, and this number increases every year. According to Texas High School Project (2011), T-STEM academies are designated for improving science and math instruction with innovative methods and learning labs. If STEM academies take on this task, researchers and people in community can expect that students who are in STEM academies would perform better than other students in terms of their science, mathematics, and literature concepts. Therefore, we compare T-STEM academies and public schools students' subjects to examine whether it is the case.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Harmon, Shannon; & Barlow, Angela T.	<p>Comparing Fractions: Developing MKT in Professional Development Settings</p> <p>In this session, we will share the results of a study examining inservice teachers understandings related to comparing fractions as developed in two different professional development settings. In one setting, participants work focused on modeling fractions and drawing conclusions based on their representations. In the other setting, participants work focused on making sense of students' representations and explanations as depicted in a classroom vignette. Results will be framed in relation to the Mathematical Knowledge for Teaching (MKT) framework. In addition, implications related to effectively supporting teachers in implementing the Common Core State Standards for Mathematics (CCSSM) will be discussed.</p>	25 MIN	Research Presentation

Thursday 1:30PM-1:55PM

E	Kelly, Catherine	<p>STEM Preparation for Elementary Teachers: A Preservice Model</p> <p>This inquiry learning based workshop will explore essential pedagogy and skills for elementary preservice teacher candidates through a full STEM, liberal arts, and professional curriculum plan. A substantial emphasis will be placed on the design process through open-ended projects, hands-on skills, teaming, and verbal and visual communication skills. Participants will have the opportunity to discuss program components and then express the concepts through discussion, quick writes, and an inquiry summary.</p>	25 MIN	Research Presentation
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F	Wood, Krista	<p>Teachers Perspectives on an Inquiry-Based Approach to Professional Development</p> <p>This qualitative study focused on understanding 8th-12th grade science teachers' perspectives of an inquiry-based professional development in a Mathematics and Science Partnership. Transcripts were analyzed using open coding (Merriam, 2009) and teacher-centered systemic reform model (Woodbury & Gess-Newsome, 2002). Two main themes emerged: What Teachers Want and Teachers Challenges. Teachers wanted more content and pedagogical content knowledge, implementation support to change their practice, and vertical collaboration across grades. Teachers perceived structural and cultural challenges to classroom reform. Findings can be used to improve the design of effective professional development by addressing teachers' perspectives when enacting reform.</p>	25 MIN	Research Presentation
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Room	Author(s)	Session Title/Abstract	Session Length	Session Type
G	Watson, Trudy	<p>Preschoolers and Science: Learning in the Early Years Research on the systematic implementation of science instruction during the preschool years is limited. As a result, this presentation seeks to report on children's learning outcomes after exposing them to the Hands On Science Outreach (HOSO) curriculum embedded within literacy-focused Prekindergarten (PreK) Head Start classrooms. The study used quantitative and qualitative methods, respectively, to investigate gains in PreK children's outcomes and teacher perceptions on implementing the science curriculum. The study revealed large gains over time among PreK children's outcomes on all domains of the third edition of the Learning Accomplishment Profile (LAP-3). In addition, the presentation will also describe teacher satisfaction during the implementation of the intervention. Implications for policy and practice will be discussed.</p>	25 MIN	Research Presentation
I	Johnson, Carla; & Waldron, Tammy	<p>Evaluating a state-wide STEM education investment This presentation will describe the planned process of evaluating the impact of a state-wide STEM education investment. Research questions and methods, as well as instruments will be shared. Implications for future STEM education investments will be discussed.</p>	25 MIN	Research Presentation
K	Redmond, Adrienne	<p>Elementary Teachers' Understanding of Fraction Concepts in the Common Core This study examined elementary teachers' understanding of the fraction concepts addressed in the Common Core Standards. Teacher attitudes towards implementation of the common core standards were also explored. Results from the study will be discussed and implications for teacher education and professional development will be highlighted.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Thursday 2:00PM-2:50PM				
D	Darling, Natalia, & Wood, Krista E.	<p>Promoting Math and Science Skills via Minds-on Learning and Alternative Assessments</p> <p>Awareness of alternative assessment methods covering three phases of teaching and learning (diagnostic pre-assessment of skills, formative assessment during instruction, and self-assessment at the conclusion of objectives) assists instructors in improving higher level learning. Consider the value of essentially testing and teaching simultaneously to motivate students and improve comprehension. Although literature confirms that alternative assessment methods help emphasize understanding and real-world applications, traditional summative tests dominate the curriculum. This presentation focuses on exploring minds-on methods to 1) determine instruction entry point, 2) develop concepts during interactive classroom collaboration, and 3) incorporate reflective assignments that highlight metacognitive skills.</p>	50 MIN	Regular Presentation
E	Balka, Don	<p>Attaining the Common Core Standards of Mathematical Practice</p> <p>The Standards for Mathematical Practice and the supporting research provide the conditions under which students learn mathematics with deep conceptual understanding. How do teachers and instructional leaders know how students are doing? A Standards of Student Practice Proficiency Matrix guides them in transforming instructional practices.</p>	50 MIN	Regular Presentation
G	Bertram, Margaret	<p>Need More Time To Improve Those Test Scores?</p> <p>Would it surprise you to learn that by removing 80-90% of low-level negative behaviors permanently, you would free up a minimum of 5 to 9 hours a week that you could then use to pursue the lesson plan? This presentation distills a five hour workshop on diffusing potential discipline issues into a 45 minute power packed training and educational tool that can be used by any teacher (newbie's and experienced) to calm down the classroom and direct the students to the lesson plan ahead.</p>	50 MIN	Regular Presentation
J	Columba, Lynn; & Drake, Bob	<p>The Power of Writing as a Way of Learning Math</p> <p>Using Journals to Promote Metacognitive Development in a Mathematics Content Course</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Barker, Heather; Frick, Tasha; Barlow, Angela T.	<p>You've Asked a Good Question, Now What? Generating classroom discourse in the science classroom begins with a good question but where does it go from there? How do you get students to listen to one another? to validate their opinions? to disagree without being confrontational? In this session, we will engage participants in an activity followed by observation of classroom videos. Through these experiences, we will identify key teacher moves for facilitating classroom discourse.</p>	50 MIN	Regular Presentation
L	Saylor, Laura; & Johnson, Carla	<p>Bring Your Own Laptop (BYOL): The journey of a large middle school into the 21st century This session will report findings of a pilot of a bring your own, 1-1 laptop initiative within a large, suburban, middle school. Technology was infused through the use of the 21st Century Framework (p21.org) where students solved real-world problems. Some teachers received coaching and professional development while others did not. Experiences through voices of students will be shared.</p>	50 MIN	Regular Presentation
MH	Ricks, Steve; & Wood, Karen	AMSTI Facilities Tour	50 MIN	TOUR
	Thursday	2:50PM-3:10PM		
	BREAK	BREAK		
	Thursday	3:10PM-4:00PM		
D	Fang, Houbin; & Zhou, Qi	<p>A Tier-III Intervention for Elementary Mathematics Word Problems Solving Mathematics word problem solving is a difficult area for elementary students. Numerous studies have investigated instructional methods and intervention strategies in an effort to help elementary students to succeed in mathematic word problem solving. This session will introduce some of these studies and methods. Especially, the presenters will focus on a Tier-III intervention, the Schema-based Instruction and its simplified version, and its effectiveness in improving student's word problem solving performance in elementary schools.</p>	50 MIN	Regular Presentation
E	An, Song	<p>Improving Students' Mathematics Process Ability Levels through the Music-Mathematics Integrated Curriculum and Instruction A class of third grade students (n=28) from an elementary school in the research. The students received music-mathematics integrated lessons as a part of their regular math curriculum. A quasi-experiment time series design with multiple pretests, mid-tests and posttests was utilized for investigating the effects of music-mathematics integrated lessons on student's mathematics process ability levels. The results demonstrated that the intervention of a series of music-mathematics integrated lessons had positive effects on the student's mathematics process ability levels.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Reeder, Stacy	<p>Problem Centered Learning: A Problem Solving Course for Mathematics Education Graduate Students</p> <p>Problem Centered Learning is a widely accepted effective approach to teaching mathematics yet most teachers are unfamiliar with it and/or uncomfortable with implementing it with their students. During this session, the key components of a course focused on PCL for graduate students will be shared. Notebooking was a focal point of student work as they made conjectures about problem solutions and investigated various paths to a solution. Multiple solutions were presented for all problems posed in an effort to support the importance of process. A variety of problems as well as student work will be presented.</p>	50 MIN	Regular Presentation
G	Douglass, Lisa; & Mascazine, John R.	<p>University + School Partnerships = Winning Combination: Planning an Effective Family Math & Science Evening</p> <p>This session explains how one university collaborated with a local school to organize and conduct a Family Math and Science Evening that resulted in positive results for university preservice methods students, university professors and teachers, parents and their K-3 children. This experience not only reinforced Project-based learning to our students, it also supported the inquiry-based method of teaching that we advocate for in our methods courses; additionally, math/science nights also demonstrate these research-based practices to inservice teachers, parents, and children in schools. This session, which would benefit both K-12 teacher as well as university faculty, will elaborate on the planning, execution, and outcomes of this event.</p>	50 MIN	Regular Presentation
I	Radford, David	<p>Improving Science and Mathematics Instruction Through Lesson Study</p> <p>Science and mathematics teachers in several urban school systems participated in an NSF funded three-year program in which they collaborated to develop, teach, analyze, and refine exemplary science and math lessons. The project used a modified form of Japanese Lesson Study that was found to be effective in urban schools. Links to project websites with lesson plans and classroom videos will be provided.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
J	Khaliqi, David; & Decker, Lisa	<p>An Inquiry into Math Teachers Circle: Findings from Two Year-long Cohorts</p> <p>Currently, over 50 Math Teachers Circles (MTCs) exist in 32 U.S. states and territories, and momentum is increasing for the continued expansion of MTCs, and studies have begun investigating their effectiveness. With 61 participants spanning 2 year-long cohorts, the current study explored teacher's pre and post (1) self-reported self-efficacy and outcome expectancy beliefs related to reformed mathematics teaching; (2) classroom observations; and (3) teacher interviews. Changes in teacher's pre to post dependent measures are reported as well as data illustrating the need to address teacher's outcome expectancy beliefs and their continuation of traditional practices. MTC strategies and results are discussed.</p>	50 MIN	Regular Presentation
K	Cobbs, Georgia; & Atkins, Trent	<p>Teaching Effectiveness of Pre-Service Teachers in an Elementary Teacher Education Program?</p> <p>The effectiveness of teacher education programs is being scrutinized from national policy-makers to local editorials. This presentation will describe ways to evaluate the effectiveness of a teacher education program. Faculty at The University of Montana has piloted two ways of demonstrating the impact of pre-service teachers on the mathematics performance of K-6 students. We will include a brief overview of the historical and political climates that lead to the need for this type of evidence, a description of the two processes that have been piloted, and the results of these practices. Next steps and practical implications will be discussed.</p>	50 MIN	Regular Presentation
L	Wilson, Jim	<p>Problem Solving with the Arithmetic Mean-Geometric Mean Inequality</p> <p>The Arithmetic Mean-Geometric Mean (AM-GM) inequality is a very useful algebraic tool for reasoning about many maximization and minimization without calculus. Yet this tool gets very little attention in modern mathematics curriculum. I will present a range of problem solving episodes where the AM-GM inequality is used.</p>	50 MIN	Regular Presentation

Thursday

4:10PM-5:00PM

E	Cassell, Darlinda; Vincent, Dan; Lawrence, Erica; & Hull, Adam	<p>Math/Science Activities/Research in an Inner City Junior High with Undergraduates</p> <p>The focus of the session deals with a data collection activity that required the use of cell phones and incorporated math, science, and technology. Interwoven throughout the activity will be discussions from the undergraduates about working in an inner city 7th/8th grade classroom and their eye-opening experiences. Intertwined in the discussions, the professors will explore ideas of working in an inner city and involving undergraduate students in research during field experiences.</p>	50 MIN	Regular Presentation
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Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Blessing, Stephen; Brown, Jessica; & Rowlett, Joel	<p>Virtual Manipulatives in the Classroom</p> <p>Thanks to advances in technology, virtual manipulatives have become a viable option for teachers to consider as a tool in their math and/or science classroom. The focus of this session will be a history of virtual manipulatives, along with the possible pros and cons of using such applications in the classroom.</p>	50 MIN	Regular Presentation
G	Mitchell, Suzanne	<p>Mathematics and Science Resources to Influence Preservice and Inservice Teacher Leader Interactions</p> <p>Leadership is about how to influence people. Science and mathematics faculty have a unique leadership opportunity to share instructional ideas and resources to influence teacher leaders. Come learn about Common Core State Standards resource tools and strategies which you can use to influence administrators and mathematics and science teachers.</p>	50 MIN	Regular Presentation
I	Wangle, Jayleen	<p>Don't pick up that pencil: Calculus student understanding of continuity</p> <p>Continuity is a central concept in college calculus. Previous research in continuity shows that students have problems with notation, function, infinity, and limits. Frequently the importance of continuity is overlooked, leaving students with little idea why the section on continuity is in their calculus book. This study uses a mixed methods model for investigating student comprehension of continuity, specifically, their concept images and how these images conflict with the formal concept definition of continuity.</p>	50 MIN	Regular Presentation
L	Thrower, Elizabeth	<p>The Ipad Classroom: Enhancing Learning in the K-12 Science and Mathematics Classroom</p> <p>The use of Ipads in the science and mathematics classroom will be discussed. The presenter will demonstrate how Ipads can be used to engage students, to supplement the course material, and increase student learning. Audience members will impart with innovative techniques and knowledge of Ipads that can be used to enhance instruction. K-12 teachers of science and mathematics will benefit from the presentation. No prior knowledge of Ipad technology is necessary, but those who are experienced Ipad users are welcome.</p>	50 MIN	Regular Presentation

Thursday 5:05PM-5:50PM

- D AWARDS & ENDOWMENT COMMITTEE MEETING**
- E CONVENTIONS COMMITTEE MEETING**
- F FINANCE COMMITTEE MEETING**
- G MEMBERSHIP COMMITTEE MEETING**
- I NOMINATIONS & ELECTIONS COMMITTEE MEETING**
- J POLICY COMMITTEE MEETING**
- L PUBLICATIONS COMMITTEE MEETING**

Thursday

RECEPTION Birmingham Civil Rights Museum: Rotunda
SSMA 6:30PM-9:00PM
AWARDS **Buses will pick up at 6:00PM**





**Friday Morning Sessions
November 9, 2012**

Convention Registration	East Meeting Hall Lobby	8:00AM-5:00PM
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Room	Author(s)	Session Title/Abstract	Session Length	Session Type
	Friday	November 9, 2012		
	Friday	8:15AM-9:20AM		
MH		BUSINESS MEETING		
		9:30AM-10:25AM		

D	Capraro, Mary; Capraro, Robert M.; Chaudhuri, Nandita; Dyer, James; & Booth, Eric	<p>Developmental Education: Which Factors Support Success</p> <p>There is a lack of research on developmental education (DE) programs causing concern for educators and policy makers. The Public Policy Research Institute at Texas A&M University during a yearlong study assessed the effectiveness of DE programs at nine higher-education institutions (five community colleges and four universities) across Texas using comprehensive aggregate data. This presentation will examine cross-site comparative findings that emerged using various configurations of supports (targeted skills workshops, tutors available, hours of tutorials, counseling and summer bridge programs) to reported student outcome data (students who pass/are retained DE classes, those who pass the post-THEA test).</p>	25 MIN	Research Presentation
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Room	Author(s)	Session Title/Abstract	Session Length	Session Type
G	White, Arthur L.; & Berlin, Donna F.	<p>Professional Development and the Professional Environment for Teaching</p> <p>Teachers expected to implement changes for educational reform, need resources, incentives, recognition, and professional development for carrying out these responsibilities. Teachers engaged in action research can contribute to improvement of teaching and professional growth. Action research, designed to prepare and support teachers in the development, implementation, and evaluation of innovations is described. For schools and students to realize the benefits that professional teachers can provide, teachers must have access to professional development opportunities in an environment including motivational, physical, and fiscal support. The Professional Environment for Teaching Survey is described as a means for profiling the teaching environment.</p>	25 MIN	Research Presentation
I	Hanegan, Nikki; & Salmon, Christine	<p>Can STEM Professional Learning Communities Transform Classrooms?</p> <p>This study examined two different types of professional learning communities (PLC) to determine if they could help high school STEM teachers transform from traditional classrooms to project-based learning (PBL) environments. The first PLC focused on PBL lesson plan development paired with a teacher and an external coach. The second PLC focused on questions used in PBL and consisted of a group of three teachers and an external coach. Evaluations demonstrated that instruction improved, but only one PLC demonstrated improved student classroom performance.</p>	25 MIN	Research Presentation
J	Cochran, Rachel; & Fulmore, Jason	<p>A Multi-faceted Approach to Assessing Change in Content Knowledge for Teaching Mathematics</p> <p>The Greater Birmingham Mathematics Partnership employed a combination of four measures to assess the impact of professional development on teachers' mathematics content knowledge: a pre-post performance assessment, a modified version of the Learning Mathematics for Teaching Project's <i>Test of Content Knowledge for Teaching Mathematics-Patterns</i> (CKTM-<i>Patterns</i>), a rubric-scored course portfolio, and an observational behavioral checklist. It was determined that meaningful, observable change in teachers' mathematics understanding occurred as a result of their participation. Instrument development, administration, scoring, and interpretation will be discussed as well as the translation of changes in content knowledge to subsequent changes in instructional practice.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Cifarelli, Victor	<p>Mathematical Beliefs: Case Studies of College Algebra Students</p> <p>This paper reports results from a study of the problem solving actions of College Algebra students (N=139). The study examined the relationship between the expressed mathematical beliefs of students and the solvers' actions in solving mathematics problems. The research questions are: (a) What are some prominent mathematical beliefs of College Algebra students?; and (b) How do students' mathematical beliefs relate to their problem solving? The paper summarizes from cases with three students to identify a range of mathematical beliefs and to show these beliefs are related to the solvers' problem solving actions.</p>	25 MIN	Research Presentation
Friday 10:00AM-10:55AM				
F	Park, John; Popejoy, Kate; & Naizer, Gil	<p>Uncovering Apps for Exploring Science Concepts</p> <p>We are relatively new users of the iPad technology. Locating and evaluating apps for science teaching can be a daunting experience for beginners. We will share our favorite discoveries from this past year during this session.</p>	50 MIN	Regular Presentation
I	Powell, Angiline; Akey, William; Anderson, Celia Rousseau; & Boyd, Shawn	<p>From Math to STEM: Challenges in an Urban Summer Academy</p> <p>Recently, Tennessee was awarded federal funding for education reform. An essential component of this reform effort was an emphasis on STEM education. Consequently our summer academy evolved from mathematics as its only focus to a STEM focus. This presentation outlines the history, challenges and successes of past summer academies and as well as difficulties involved in switching from mathematics to STEM. Perspectives from administrators, students and teachers will be examined. Exemplary mathematics, science and engineering activities will also be included.</p>	50 MIN	Regular Presentation
Friday 10:00AM-10:25AM				
D	Capraro, Robert; Capraro, Mary Margaret; Chaudhuri, Nandita; Booth, Eric; & Dyer, Jim	<p>The Bridging High School and College: Evaluating Post Secondary Developmental Education Programs</p> <p>Developmental education in mathematics and language arts is burgeoning and many doctoral granting institutions are now incorporating it into their offerings. The session examines the current practices in post-secondary developmental education, available protocols for evaluating mathematics and technology, and the alignment between the College and Career Readiness Standards, course content, and student success.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
E	Sahin, Alpaslan; Akgun, Ozcan Erkan; Erdogan, Niyazi; Cavlazoglu, Baki; Cetin, Ceyhun Sevket; Capraro, Robert M.; & Capraro, Mary Margaret Capraro	<p>Effects of STEM-Related Activities on High School Students' Motivation, Learning Strategy Use, and Self-Regulation</p> <p>A correlational study examines relationships between students' STEM-related activities participation and their motivational orientation, self-regulated learning, and classroom academic performance for 400 9-12 graders in a local charter school. A self-report measure of student self-efficacy, intrinsic value, test anxiety, self-regulation, and use of learning strategies were administered, and performance data about students' end-of-year GPAs were obtained from the school database. The implications of individual differences in motivational orientation for cognitive engagement and self-regulation in the classroom will be discussed in light of effects of STEM-related activities.</p>	25 MIN	Research Presentation
G	Zollman, Alan	<p>Rocky & Bullwinkle: Getting Tenure, Promotion, Publishing, Grantmanship, and Happiness</p>	25 MIN	Research Presentation
J	Zimmerman- Brown, Veronique	<p>Improving Performance: Examining the Link Between Self-Efficacy and Support for Secondary Female Math Teachers</p> <p>A teacher's sense of self-efficacy has been linked to improved instructional practices and student achievement. During this session, the researcher will discuss findings from a study that explored possible relationships between teacher self-efficacy among secondary math teachers in Alabama and administrative support, teacher/colleague support, and support through resources. The study also examined whether gender and race relate to teachers' sense of self-efficacy. Examining self-efficacy for secondary math teachers is an important step in the strategic support of these individuals and improving student achievement in mathematics.</p>	25 MIN	Research Presentation
K	Beauford, Judy; & Meche, Suzanne	<p>Learning to Count in the US, Bolivia, and Mexico</p> <p>Report on a seminar held November, 2011, where kindergarten teachers from the three countries shared experiences about their involvement in research on the influence of language on number sense.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Friday 10:30AM-10:55AM				
D	O'Donnell, Patricia	<p>Exploring Life Through Web-Based Inquiry Learning: A Case Study</p> <p>The presentation is a case study evaluation of a veteran science teacher's first year implementation of a biology curricular program called Exploring life (E-Life). The focus of the study is to evaluate how the 4E instructional model is being implemented including the instructional use of the essential features of inquiry. The project examines materials selected by the teacher for classroom implementation including the use of technology in the instructional settings, especially since the curriculum included a web-based portion of learning materials. Lastly, the teacher's chosen assessment types will be categorized and examined during E-Life implementation.</p>	25 MIN	Research Presentation
E	Weinburgh, Molly	<p>Using the 5R Instructional Model to Integrate Science Academic Language for ELLs</p> <p>This research focused on the acquisition of academic language necessary to engage in scientific Discourse as Ells engage in inquiry-based instruction. The researchers' intentions were to test the 5R model as a tool for increasing content knowledge and language skills. In addition, the model strongly relied on moving the students from inquiry lessons that have many essential elements that are teacher-driven to more elements that are student-driven, thereby eliminating the writing of objectives on the board prior to the lesson. Data from 5 years of teaching summer school to recent immigrant students inform the conclusions of this study.</p>	25 MIN	Research Presentation
G	Barnes, Caitlin; & Angle, Juile	<p>Views that Teachers Have Toward the Nature of Science in Teaching Science</p> <p>The nature of science is a fundamental attribute of scientific literacy, characterizing how scientific knowledge is generated. Preparing teachers to provide an accurate understanding of the nature of science helps students identify the strengths and limitations of scientific knowledge. Given the emphasizes placed on science teacher preparedness to effectively engage students in lessons that address the nature of science, this research study uses Q-methodology to identify and describe views that pre-service and in-service teachers have toward the nature of science in their teaching. The results show three distinct views that teachers have toward the nature of science in their teaching.</p>	25 MIN	Research Presentation
J	McClintock, James	<p>Adventures in Disappearing Land: Lost Antarctica</p> <p>"A close look at the life of a scientist in a strange wilderness for months at a time, and a revelatory exploration of the region's unique wildlife...McClintock is a determined, evenhanded guide." -Smithsonian magazine</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Akgun, Ozcan Erkan; Sahin, Alpaslan; & Capraro, Robert M.	<p>Investigating Relationships of Motivational and Self-Regulated Learning and Technological Pedagogical Content Knowledge Components of Pre-service</p> <p>A correlational study examines relationships between pre-service mathematics teachers motivational and self-regulated learning skills and their competence in technological and pedagogical content knowledge. Motivated Strategies for Learning Questionnaire [MSLQ] and Technological and Pedagogical Content Knowledge [TPCK] scale were administered to 100 pre-service 4-8 Math and Science teachers at a south-central college. The implications of study will be discussed in light of developing better teacher education programs for STEM teaching and learning.</p>	25 MIN	Research Presentation
Friday 11:00AM-11:55AM				
E	Cooper, Susan	<p>Integrating Service Learning Teaching Opportunities into Undergraduate Courses</p> <p>Service learning engages interested undergraduates in the communities surrounding the university. This session will describe how we structured meaningful teaching opportunities for preservice methods students as well as undergraduate STEM majors who may be interested in teaching as a career. Students developed and presented inquiry-based lessons in classrooms as well as informal education sites, including district STEM education days, local school STEM nights, and science museums. Organization, advantages, pitfalls, and the importance of student reflection on their service learning will be discussed.</p>	50 MIN	Regular Presentation
G	Balka, Don	<p>Geometry for All, 1901-2012</p> <p>SSMA has been publishing its journal since 1901. Many articles have focused on geometry curricula, geometric reasoning, the history of geometry, and various geometric oddities useful in today's classroom. See what you missed and hear some quotes that still resonate with mathematics teachers in 2012.</p>	50 MIN	Regular Presentation
J	Stuessy, Carol; & Schielack, Janie	<p>Using Information Technology to Build Communities Bridging Science Research and Classroom Practice</p> <p>Highlights a new book describing the Information Technology in Science Center for Teaching and Learning, a program funded by the National Science Foundation to provide professional development and graduate degrees producing 21st century science education leaders. The Center focused on transforming scientists' use of information technology (e.g., modeling, visualization, simulation, using complex data sets) to create innovative, practical classroom experiences for K-12 learners. The presenter shares experiences of problem-based learning communities of scientists, education researchers, and teachers who connected methods of doing and teaching science with information technology. Some copies of the book will be available as door prizes.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Friday 11:00AM-11:25AM				
D	Watson, Trudy	<p>Effects of Inquiry-Based PreK Curricula on Children's Knowledge of Mathematics</p> <p>This presentation describes a pre-kindergarten math/science curriculum, the professional development of Head Start teachers, pre-kindergarten children's outcomes, and findings from the first three years of data collection. Suggestions for helping teachers become successful facilitators of math/science activities will be shared with participants. The treatment groups participated in training workshops and received on-site mentoring to successfully implement the activities which included both math and science concepts and processes. Observations in classrooms measured the fidelity of implementation. The pre- and post-tests of children's' math and science skills were measured using the Test of Early Mathematics Ability and the Learning Accomplishment Profile-Revised Edition.</p>	25 MIN	Research Presentation
F	Brawner, Bowen	<p>Interdisciplinary Undergraduate Research Teams Mission: Planetary Atmospheric Entry Vehicle.</p> <p>Engaging undergraduates in inquiry and investigations that bring together the Science, Technology, Engineering, and Mathematics (STEM) fields. The purpose of this session will be to share an example of such an experience and the impact on students thinking and practices. We will look closely at how an applied learning experience through a design-build-launch competition can engage students in the interdisciplinary end-to-end life cycle of a complex engineering project. The role of faculty mentors will also be explored.</p>	25 MIN	Research Presentation
I	Sahin, Alpaslan; Eskicumali, Ahmet; Jones, Meredith; Capraro, Robert M. Capraro; & Capraro, Mary Margaret	<p>The relationship between a Multi-school Charter System's school culture and respective schools' State test achievements on mathematics and science.</p> <p>The aim to the study was to investigate the school culture of a multi-school charter system and their relationships with respective schools standardized test scores on math and science. We also aimed to examine how math and science teachers of charter schools perceive their respective school's school culture in six different domains: collaborative leadership, teacher collaboration, professional development, collegial support, unity of purpose, and learning partnership. The sample was 38 charter schools within a single charter school system. Data were collected by using Qualtrics survey that is designed to collect information about teachers' perceptions of their respective school's school cultures within six given domains.</p>	25 MIN	Research Presentation
Friday 11:30AM-11:55AM				

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
D	Chen	<p>A Study of Physics Science Fairs in Elementary Schools in Taipei City</p> <p>The main goal of the study is to explore the criteria of science fairs and the subjects of the physics section of science fairs in Taipei City from 2011 to 2012. The researcher was one of the reviewers of the committee of the science fairs in Taipei City from 2011 to 2012. The researcher conducted qualitative research including interviews with participants of science fairs. All 120 science fair topics covered in the physics section were analyzed from 2011 to 2012.</p>	25 MIN	Research Presentation
F	Zollman, Alan	<p>PAST PRESIDENT SESSION</p>	25 MIN	Research Presentation
I	Adams, Cindy	<p>Using Writing as a Way to Measure Critical Thinking in Biology Courses</p> <p>There is mounting pressure today to teach more higher-order thinking skills in order to enhance our collective ability to understand key issues and solve global problems. Yet assessing the development of these skills continues to be a challenge. This session will explore the validity of using written analyses of scientific papers as a way to measure the effectiveness of three different classroom methods (classroom response systems vs. discussions vs. written instruction) in enhancing critical thinking skills in introductory biology classes for both science majors and non-science majors. Both quantitative and qualitative data will be presented.</p>	25 MIN	Research Presentation
L	Holbert, Sydney Margaret	<p>Mathematical Tasks without Words: Perceptions of Reluctant Problem Solvers</p> <p>In many math classrooms sits at least one student who is reluctant to engage in problem solving. This session will describe a research study which examined reluctant problem solvers and their attraction to math tasks without words. The study centered around the research question: What are the perceptions of reluctant problem solvers related to math tasks without words?</p>	25 MIN	Research Presentation

Friday Lunch

**Lunch and Keynote
Speaker**

**East Meeting
Room: MH**

12:00 – 1:20 PM

Opening Remarks

- Honorable William A Bell, Sr. , Mayor, City of Birmingham

Welcome from University of Alabama Birmingham

- Stephen Barnes
Professor, School of Medicine



Dr. Lawrence DeLucas (Larry) will present on *Space Flight and Research on the International Space Station.*

James "Larry" DeLucas (O. D., Ph.D.) is an [American biochemist](#) who flew aboard NASA [Space Shuttle](#) mission [STS-50](#) as a [Payload Specialist](#). He was born on July 11, 1950 in [Syracuse, New York](#), and is currently married with three children. His recreational interests include [basketball](#), [scuba diving](#), [bowling](#), [model airplanes](#), [astronomy](#) and [reading](#).

DeLucas was a member of the crew of Space Shuttle Columbia for STS-50 (June 25-July 9, 1992), the United States Microgravity Laboratory-1 (USML-1) Spacelab mission. Over a two-week period, the crew conducted a wide variety of experiments relating to materials processing and fluid physics. At mission conclusion, DeLucas had traveled over 5.7 million miles in 221 Earth orbits, and had logged over 331 hours in space.

Dr. DeLucas, is a man of many hats—and one helmet. To the list of biochemist, teacher, optometrist, researcher, and crystallographer, one must also add astronaut. The hat he currently wears, however, may be the largest of them all—that of director of the UAB Center for Macromolecular Crystallography (CMC).

It is in this capacity that DeLucas oversees research that is changing the way scientists are seeking cures for diseases such as diabetes, cancer, and AIDS, as well as parasitic diseases that afflict millions of people in developing countries.



Friday Afternoon Sessions

November 9, 2012

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Friday		1:30PM-2:25PM		
J	Brown, Sue; & Browning, Sandra Browning	<p>Improving Preservice Teachers' Ability to Write Mathematics Lesson Plans</p> <p>This session will share the strategies implemented to improve preservice teachers' ability to write mathematics lesson plans and the results of implementation. Examples of the strategies utilized are individual meetings, evaluating both good and bad lesson plans, group constructed components of a lesson plan, individual constructed components of a lesson plan, and scaffolding lesson plans.</p>	50 MIN	Regular Presentation
L	Matney, Gabriel; & Jackson, Jack	<p>Improving Mathematics Preservice Teacher Efficacy through Field Based Research</p> <p>The session will explore the notion of what teacher educators can do to raise preservice teachers' efficacy. Toward this aim a recent quantitative study involving a comparison of preservice teacher's efficacy when doing two types of research projects during a methods course will be discussed. The study investigated the difference in teacher efficacy measures of two groups of preservice teachers who were given modified research projects and were enrolled in a secondary mathematics methods course. Data revealed that there were statistically significant differences between the two groups' teacher efficacy measures.</p>	50 MIN	Regular Presentation
Friday		1:30PM-1:55PM		
D	Micham, Shelly; Israel, Maya; & Maynard, Kathie	<p>Engineering Design: An Instructional Strategy to Close the Gap?</p> <p>Improving science literacy and achievement for ALL learners is not new to K-12 classrooms. However, the engineering design process as an instructional strategy is relatively new for meeting the demand for increased scientific literacy for all students, especially for urban minorities and struggling learners. This mixed methods intervention study with pre/post-tests examined the impact of engineering design on 5th grade students' science knowledge and science and engineering attitudes in a high-needs school district. Data have been collected and analysis is currently in process. Preliminary findings suggest an increase in student science knowledge.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
E	Smajic; Almir; & Shores, Melanie L.; Moore, Jennifer; Lawley, Ji Ji	<p>Factors that Influence Mathematics Instruction in Private and Public Middle School</p> <p>This qualitative study examined factors that influenced two private and two public middle school mathematics teachers' instructional practices (lessons, methods, and teaching decisions). Three themes emerged: teachers' philosophical stance, school culture, and teacher/student relationships. The researcher analyzed the data using a cross-case analysis method and found that the more experienced teachers were more comfortable using investigative, constructivist approaches. Additionally, the findings of this study revealed that the primary factor influencing mathematics instruction was the level of parental involvement reported by the teachers. Across all four participants, the researcher found that teachers placed great importance on enhancing teacher/student relationships.</p>	25 MIN	Research Presentation
G	Cavlazoglu, Baki; Stuessy, Carol L.	<p>A concept map of Earthquake Engineering Education Project for STEM Summer Workshop</p> <p>EEEEP concept map scaffolds the learning process of earthquake engineering with its interconnections of four main strands that are earth systems, physical systems, designed engineering systems, and social systems. The concept map developed by experts in science education and engineering areas for STEM high school teachers. It was purposed that the concept map improves teacher's earthquake engineering literacy. This is because it provides concrete and visual organization of the crucial earthquake engineering concepts in a well organized way that facilitates meaningful learning of the teachers. Then, the teachers could implement the earthquake engineering concept map into their STEM classrooms.</p>	25 MIN	Research Presentation
I	Blaudeau, Tamilane	<p>Assessing the Five Components of Fitness</p> <p>This lecture will provide teachers with the ability to relay the "how to's" of assessing the five components of fitness while incorporating science and math. The five components of fitness are body composition, cardio-respiratory fitness, muscular strength, muscular endurance, and flexibility. A brief discussion, along with handouts, introducing the scientific and mathematic principles and methods for assessing and interpreting fitness will be presented.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Wagner-Krankel, Mary	<p>Pre-Service Teachers' Beliefs about Mathematics and the Events That Impact Them</p> <p>As part of a mathematics content methods course, K-8 pre-service teachers were asked to read an article focusing on students entering teacher education programs and their preconceptions about teaching mathematics and science based on their prior experiences as students. Upon completing the article, students were asked to : (1) answer research design questions related to the article and (2) write a mathematics autobiography describing their current beliefs about mathematics, identifying critical events in their mathematics education which may have contributed to these beliefs, and predict how these beliefs could impact their classroom practices as elementary teachers. Results of the study will be discussed.</p>	25 MIN	Research Presentation
Friday 2:00PM-2:25PM				
D	Banes, Brandon; & Miller, Diane	<p>Teaching Pre-service Elementary Teachers Number Concepts Through Problem-Based Learning</p> <p>During the fall 2011 semester a number concepts course for pre-service elementary teachers was taught using Problem-based Learning (PBL) and problem solving as the primary instructional methodology. The researchers used a control-experimental group design to investigate the value of implementing a problem-based learning curriculum to teach mathematics content. Pre- and post-test data were collected on students' content knowledge, mathematics anxiety, and attitudes toward mathematics. The results of this quantitative study are presented along with suggestions for continued research.</p>	25 MIN	Research Presentation
E	Lamphere-Jordan, Patricia	<p>Pre-service secondary candidates' analysis and interpretation of the common core curriculum standards through inquire-based lesson designs</p> <p>Pre-service secondary candidates have analyzed the Common Core Curriculum Standards based on a comparison to the NCTM Content and Process Standards and the state's learning objectives. Based on the students' findings, they have developed inquiry-based lesson drawn from the suggestions for teaching the concepts presented in the Common Core and developing a problem-centered learning environment in secondary mathematics. These lessons are modeled for the class who provide written feedback on ways to strengthen student understanding and learning. Analyses of the Common Core and lessons will be shared with the audience.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Smith, Tommy; & Shores, Melanie L.	<p>CCSS Standards for Mathematical Practice in Mathematics Courses for Prospective K-12 Teachers</p> <p>This presentation will share experiences from two inquiry-based mathematics courses. The courses use pedagogy which models many of the CCSS Standards for Mathematical Practice. Students regularly engage in group problem solving tasks that often involve hands-on investigations. The courses emphasize reasoning and sense making. A key feature developed in the process is communicating mathematics to others in written and oral form. In group and individual problem solving tasks, students learn to represent problems numerically, using words, using graphs, algebraically, and using physical models. The ultimate goal of these courses is to develop mathematically proficient students who will be teachers.</p>	25 MIN	Research Presentation
G	Perkins, Abby	<p>Earthquake Engineering Education Project: A classroom board game for high school students</p> <p>Designed to teach about the interconnectivity of urban infrastructure components, the EEEP game was developed for high school teachers to play at a summer 2012 STEM workshop and to take back to their classrooms. The game aims to increase teachers' and students' literacy about earthquake engineering in an innovative way. Fun for adults and high school students, the EEEP game is an educational tool to learn about complex systems thinking. Research and design consisted of numerous focus groups and test plays. Workshop teachers provided qualitative data about the game effectiveness and logistics via video recorded game play and interviews.</p>	25 MIN	Research Presentation
I	Moseley, Christine; Bilica, Kimberly; & Wandless, Ana	<p>Role of teaching efficacy on second career science teachers in high-needs schools.</p> <p>This exploratory research study examined the relationship between science teaching efficacy and teacher satisfaction for second career, middle and high school science teachers in high needs school districts. Preliminary analysis of the qualitative data reveals an emergence of a triad of major concepts across the first year of teaching. These identified concepts were gathered through a grounded theory research approach and include issues of classroom management and science teaching efficacy developed in the context of cultural efficaciousness. Data analysis, findings, and implications to teacher educators will be shared.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Varghese, Thomas	<p>Teaching Introductory Statistics to Business Students An ability to understand, interpret and critically evaluate data is essential to all undergraduate students. Hence one or two Statistics courses are included in all Non- Statistics faculties including Business. However, students approach statistics courses with a negative attitude. In this presentation, I will discuss the challenges that students face in a Statistics class. The information on the disinterest and the difficulties faced by business students will help instructors revise their traditional statistics courses. I will also discuss some ways in which instructors may support students in overcoming these challenges.</p>	25 MIN	Research Presentation
Friday		2:30PM-2:55PM		
J	O'Neal, Marcia; Radford, Beverly; & Dawson, Joan	<p>Using External Evaluation Results to Improve Professional Development: An Example from ALAHASP Alabama Hands-On Activity Science Program (ALAHASP) at the University of Alabama at Birmingham provides sustained professional development in inquiry science methods to K-8 science teachers, teacher leaders, and administrators. ALAHASP has served Alabama school systems since 1994. To complement ALAHASP's extensive and ongoing internal evaluation activities, the UAB Center for Educational Accountability (CEA) conducts external evaluations by examining participant satisfaction, change in teachers' content knowledge, and anticipated change in classroom teaching. This presentation will include descriptions of ALAHASP activities, a summary of evaluation results, and discussion of how ALAHASP staff use the evaluation data to enhance future offerings.</p>	25 MIN	Research Presentation
Friday		2:30PM-3:20PM		
D	Snyder, Scott	<p>Better rubrics and shorter tests Two critical issues in assessment in mathematics and science are: (a) designing and using rubrics, and (b) designing efficient and valid objective tests. This presentation will discuss psychometric principles and practical recommendations relating to these two challenges. The content is appropriate to school and university teachers.</p>	50 MIN	Regular Presentation
E	Yantz, Jennifer; Hanson, Brandon; Barlow, Angela; & Rowell, Ginger	<p>Using NCTM Process Standards to Support Statistical Understanding of Hypothesis Testing Lessons based on the NCTM Process Standards engage students in Problem solving, Communication, Reasoning and Proof, Connections, and Representation.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Reeder, Stacy; & Laubach, Timothy	<p>An Inquiry into Inquiry: Examining Middle School Mathematics and Science Teachers' Understandings of Inquiry</p> <p>The innovative features of a Mathematics and Science Partnership (MSP) grant project where mathematics and science were integrated through the field of engineering will be shared. Forty-nine middle school mathematics and science teachers participated in a two-week summer institute that was structured into two components: (1) problem-solving-focused engineering investigations in laboratories with engineers and (2) inquiry-focused pedagogy experiences in classrooms with mathematics and science educators. Data regarding teachers' understanding of inquiry were collected with pre- and post-surveys. The results of this study indicate that teachers' understandings of inquiry were impacted in varied and meaningful ways.</p>	50 MIN	Regular Presentation
G	Watson, Jan	<p>Earthquake has occurred! Let's deal with the "after-shock".</p> <p>Are we really "dealing with it"? Are we addressing the major issue of "blindness and deafness" in the contemporary student? No one can deny that since the turn of the century our students are of a "different" nature reflecting an earthquake of change. Class makeup now comprises large numbers of Resource, ESL, ADHD, defiant and non-attentive students. So, let's "deal with it"-deal with students who are deaf to instruction, blind to "seeing" in the mind, and non-motivated to achieve. Background surveys and scientific studies pave the way for "counteractive pedagogy"--all encompassed in a single "Five-point/lesson design, STAR".</p>	50 MIN	Regular Presentation
I	Hu, Hsing-Wen; & Lin, Cheng-Yao	<p>Using mathematical habits of mind to help seventh graders learn division of fractions</p> <p>In this research study, seventh grade students' capacities in division of fractions were investigated before the experimental process. Two classes were assigned as an experimental group and as a control group. The experimental group received new teaching strategies (integrating Mathematical Habits of Mind into the learning process of division of fractions), while the control group received traditional algorithms (invert-and-multiply) to learn division of fractions. After receiving different instructions, experimental and control groups were assessed to see the learning results. Two weeks after the experiment, students were assessed again to evaluate the stability of learning results.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Stotz, Megan; & Szmodis, Whitney	<p>Inquiry Illustrated: Using Literature to Teach Science Inquiry Illustrated: Using Literature to Teach Science, K-2 educators will work together to analyze text, connect scientific inquiry, and discover the process students take to discover meaningful connections with the science/literature connection. The text being examined will cover topics such as Physical and Life Sciences, Space, Technology, and more. Each text will enhance K-2 lessons either as an introduction to concepts, enhance key vocabulary, or during lessons to incorporate manipulatives to develop a concept further. Students will acquire deeper understanding of important terminology, critical thinking, and problem solving, as well as nurture their love of reading.</p>	50 MIN	Regular Presentation
L	Nesmith, Suzanne; & Cooper, Sandi	<p>Exploring Conceptual Change through the Lens of an Elementary Mathematics/Science Teachers' Academy Recognizing that many elementary teachers struggle with perceived or actual mathematics and science content limitations led us to design and share a mathematics/science academy. The academy was aimed at assisting teacher participants in confronting and addressing their possible alternative mathematics/science conceptions. By sharing and modeling content-specific activities in an inquiry oriented manner, our goal was to simultaneously address content and pedagogy while also allowing teachers to recognize the potential impact of their alternative conceptions on students' understanding. Results of teacher participants' pre- and post- content evaluations as well as the correlated content-specific activities utilized during the academy will be shared.</p>	50 MIN	Regular Presentation
Friday		3:20PM-3:40PM		
BREAK		BREAK		
E	Choi, Sanghee; & Nelsm, April	<p>Utilizing Scientific Information Through Inquiry and Writing The main purpose of this project was to improve pre-service teachers' conceptual understanding in physical science through the Interactive Science Notebook (ISN) and their pedagogical content knowledge (PCK) by developing K-5 curriculum units. Forty undergraduate students who enrolled in physical science courses at a university in North Georgia were participants in this study. The Science Teaching Efficacy Belief Instrument (STEBI-B) was administered before and after taking the course. The content-specific test and project-based rubrics were developed and used to assess the science-specific conceptual understanding and pedagogical content knowledge. Students improved conceptual understandings and PCK as a result of this study.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Yantz, Jennifer; & Rowell, Ginger Holmes	<p>Can a Concentrated, Inquiry-based, Team Research Experience Improve College Performance in STEM? Universities across the nation are working to increase the number of Science, Technology, Engineering, and Mathematics (STEM) graduates each year.</p>	25 MIN	Research Presentation
G	De La Cruz, Jessica	<p>Informing Teachers' Instructional Decisions Related to Proportional Reasoning This session will examine the ways that teachers use research-based knowledge of proportional reasoning development to inform their instruction. The case studies of four middle school teachers, as well as a cross-case analysis, will be presented. These teachers participated in a workshop intervention that explored the existing research on adolescents' thinking about proportions. The workshop design was inspired by the cognitively guided instruction (CGI) studies and the goal was for the teachers' proportional reasoning instruction to become more cognitively guided after the workshop.</p>	25 MIN	Research Presentation
I	Gaddy, Angeline; Baxter, Wesley A.; & Barlow, Angela T.	<p>Mathematical Disagreements: An Examination of Elementary Teachers' Perception In attempting to make sense of mathematics, mathematical disagreements arise as students challenge their classmates' ideas and defend their own. In this study, we utilized video as a stimulus for examining elementary teachers' perceptions of mathematical disagreements in the classroom. In this session, we will provide the results of our work along with implications related to supporting teachers in meeting the expectations of the Standards for Mathematical Practice.</p>	25 MIN	Research Presentation
J	Walton, Janet; & Johnson, Carla	<p>STEM Stakeholder Awareness Survey Development The federal government recently awarded \$15.7 million to the state of Tennessee for the establishment of the Tennessee STEM Innovation Network as part of the state's \$500 million Race to the Top award. This funding will be distributed via a network of STEM hubs composed of K-12 schools, industry and private sector partners, and post-secondary educational institutions. These hubs will create an infrastructure for STEM education reform and seek to increase awareness of STEM education issues in the state. This presentation outlines the process by which Dr. Carla Johnson and her research assistant formulated the surveys, and provides a conceptual framework and context for the survey instruments.</p>	25 MIN	Research Presentation

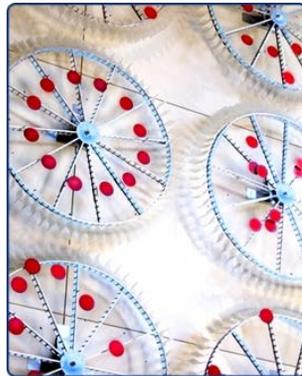
Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	West, Sandra; & Browning, Sandra	<p>Correlated Science and Mathematics This presentation describes the evaluation of a professional development (PD) model called Correlated Science and Mathematics (CSM) for its effectiveness in enabling grades 5-8 teachers to integrate science and mathematics curriculum and to use the proper language of each discipline. Although national standards recommend integration, without effective PD models, broad-scale integration is not likely to occur. The implementation of the critical attributes of the CSM PD model was effective in enabling teachers to effectively plan and teach integrated science and mathematics lessons as demonstrated in classroom observations and lesson plans.</p>	25 MIN	Research Presentation
L	Gill, Kristina; & Ortega, Ashleigh	<p>Creating a Positive Mathematics Classroom Environment Students often respond to mathematics in a negative way. There can be many reasons for why students display this negative attitude, but it is up to the teacher to create a classroom environment that counteracts their negativity. The objectives of this study include using a survey to assess the attitudes of a group of middle-school students and using interviews to gain insight into strategies teachers use in mathematics classrooms to change students' attitudes.</p>	25 MIN	Research Presentation
Friday 4:10PM-5:00PM				
E	Parrish, Sherry	<p>Number Talks: A Path to Numerical Reasoning This session provides an introduction to number talks and demonstrates how this classroom routine can support students in developing accurate, efficient, and flexible computation strategies. Classroom video clips will be used to highlight the goals of number talks and how they address the Common Core Standards and Mathematical Practices.</p>	50 MIN	Regular Presentation
F	Smith-Walters, Cindi; & Barker, Heather	<p>TOP TIPS & TOOLS: Improving Retention, Review, and Results in Your Classroom Research reveals that students who frequently review material have increased retention and higher scores. Participants will be introduced to a number of fun and engaging ways to incorporate the learning of concepts and information retention into their own classes. Strategies shared will be active, cooperative and suitable for use in literally any subject area. Most importantly they will help students retain information. Participants will leave with a number of new tools for their teaching bag of tricks.</p>	50 MIN	Regular Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
I	Sasson, Irit; & Cohen, Donita	<p>The gender gap in physics education: The instructional design effect</p> <p>Relationships between higher-education and schools may contribute to promoting science education among young students. This research investigated the implementation of an enrichment science academic program. Initial results among 515 students indicated positive attitudes with no differences in respect to gender excluding in physics. In order to get a deeper understanding, about 70 students conducted special questionnaires, before and after the physics enrichment day. Questionnaires assessed attitudes and knowledge. We found that the activity moderately improved boys' attitudes toward physics, but that girls displayed decreased interest and self-efficacy toward physics. Research results demonstrate the process for designing a more effective intervention.</p>	50 MIN	Regular Presentation
K	Tuft, Elaine	<p>Finding and Creating Worthwhile Mathematical Tasks</p> <p>This session focuses on what makes a mathematical task worthwhile as well as how to find and create these types of tasks. Part of the session will be used to discuss characteristics of worthwhile tasks and will include an emphasis on the strategies and behaviors in which those tasks invite students to engage. Methods for tweaking more traditional tasks and questions to make them more worthwhile will be shared. Finally, examples of student-tested worthwhile mathematical tasks for elementary-age students will be provided.</p>	50 MIN	Regular Presentation
L	McCoombs, Paul	<p>Investigating Student Understanding of Series</p> <p>This talk will discuss undergraduate college student understanding of series in calculus. In particular, we will discuss some of the research that has been conducted with student understanding of function, infinity, limit and sequence and see how this may relate to student understanding of series.</p>	50 MIN	Regular Presentation

Friday 5:05PM-5:50PM

D	AWARDS & ENDOWMENT	COMMITTEE MEETING
E	CONVENTIONS	COMMITTEE MEETING
F	FINANCE	COMMITTEE MEETING
G	MEMBERSHIP	COMMITTEE MEETING
I	NOMINATIONS & ELECTIONS	COMMITTEE MEETING
K	POLICY	COMMITTEE MEETING
L	PUBLICATIONS	COMMITTEE MEETING

Friday	McWane Science Center (Optional) **Bus will pick up at 5:00PM in front of Hotel**	5:30PM-9:30PM
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Saturday Sessions November 10, 2012		
Convention Registration	East Meeting Hall Lobby	7:30AM-1:00PM

Saturday Morning Sessions November 10, 2012
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Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Saturday				
November 10, 2012				
8:00AM-9:25AM				

D	Tucker, Deborah; & Gardner, Grant M.	<p>Hands-on Performance Assessment Engages K-12 Students with Science Practices</p> <p>With hands-on performance assessment tasks, students are provided with apparatus and are expected to conduct an investigation and communicate findings. Workshop objectives include: understanding the various uses of hands-on performance tasks as assessment tools; developing awareness of the different kinds of data produced from untraditional testing and hands-on performance assessment; and, familiarization with additional assessment tools for assessing student inquiry. Participants will engage in a hands-on science performance task, score their own work, review samples of student work, explore the uses and advantages of this form of assessment, and reflect on its use in their own classrooms.</p>	90 MIN	Workshop
I	McCall, Madelon; & Nesmith, Suzanne	<p>Grappling with Teachers' Unnatural Understanding of the Nature of Science</p> <p>Conceptual understanding of science and implementation of scientific inquiry are incomplete in preparing a scientifically literate populace if an understanding of the nature of science is omitted. Many inservice and preservice teachers have limited understanding of the essence of science and/or do not understand how to explicitly teach the nature of science. The means for building an appreciation of the nature of science as well as specific activities that train K-16 teachers to include nature of science tenets in all activities will be shared.</p>	90 MIN	Workshop

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Saturday 8:00AM-8:25AM				
E	Terry, Candace	<p>The Impact of Contextual Instruction on Algebra Students' Understanding of Exponential Functions</p> <p>This presentation shares results from of an action research project regarding exponential functions explored through contextual instruction. Sharing elements of the project include, but are not limited to: real world situations that model exponential functions; old pedagogical ideas with new implementation strategies; writing prompts; and student writing samples. Exponential functions placed into a real-world context can generate connectivity of mathematical concepts to experiential learning, thereby establishing meaning for understanding and retention. A handout featuring highlights of the action research project will be shared during the presentation.</p>	25 MIN	Research Presentation
F	Bonner, Jeffery; & Rutledge, Michael	<p>Impact of Active Learning Activities in a University level Non-Major Biology Course</p> <p>This study is to determine the impact of active-learning exercises on students' final grade in a university level non-majors biology course. The course is taught utilizing active-learning exercises developed as part of a diversified instructional approach. A statistical analysis was done to assess the impact of the active learning exercises on student final grades (correlations between test performance & activity grades; the overall contribution to the final lecture grade of the activities is assessed). That is, of those students who earn specific grades in the lecture component of the class (A's, B's etc.), what impact does the active-learning exercises have on student final grades.</p>	25 MIN	Research Presentation
J	Bogan, Margaret B.	<p>Teaching the "Me" in sustainability: Developing a belief system</p> <p>This paper reveals the impact of American Indian teachings to engender the "me" in sustainability using pre/post test data collection technique. Students visited a Florida Creek Indian Village or participated in an on-campus program during which cultural worldview and medicinal plant information was presented which covered topics of ecology, respectful and responsible human behavior. The concepts of who I am, why I am, and the me is sustainable behaviors reinforced student sustainable behaviors. The most significant learning in this study was the realization that humankind is at the bottom and in the center of all ecological systems.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Sefton, Rachel	<p>Priming Competence to Decrease Cognitive Test Anxiety and Increase Test Performance</p> <p>In a lab setting, Lang and Lang (2010) found that "priming competence diminished the association between cognitive test anxiety and test performance by heightening the performance of cognitively test-anxious students" (p. 812) and suggest future researchers "prime only people with high cognitive test anxiety. It is also unclear how effective competence priming is if it is used repeatedly so that cognitively test-anxious persons become accustomed to it" (p. 818). Before unit tests in my College Algebra class, I primed half my students with high cognitive test anxiety to compare their performance with their classmates'. Results will be discussed.</p>	25 MIN	Research Presentation
L	Stuessy, Carol; & Bozeman, Dane	<p>An ecological approach to the study of high school science learning environments</p> <p>Much as ecologists engage in the scientific study of the relations of living organisms with respect to each other and their environment, we have engaged in the scientific study of a random sample of 50 high schools as ecosystems of science learning. We investigated interactions and dependencies of administrators, teachers, and students within high school science learning systems. Analysis with Cramer's V-statistic yielded surprising results in assessing the strength of association among schools-related variables of science teacher support (recruitment, induction, PD, retention, working conditions); science teachers' levels of professional activity, job satisfaction, and retention rates; and student outcomes.</p>	25 MIN	Research Presentation
Saturday 8:30AM-9:25AM				
E	Calhoun, Charles	<p>A 'Rational' Approach to Teaching Fractions in Grades 3 through 5"</p> <p>This session will focus on teaching fractions in line with the Common Core State Standards for Mathematics. The emphasis is on teaching fractions in a way that makes sense to students.</p>	50 MIN	Regular Session

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Papadimitriou, Michael	<p>High School Students' Perceptions of Internship Experiences and Related Career Choice Impact</p> <p>Many high schools operate internship programs with the purpose of providing authentic work experiences. Through these experiences, students are exposed to the unrealistic nature of perceptions of practice, nuances of practice and authentic skills of practice. The purpose of this study was to illuminate STEM students' perceptions of internship experiences and to examine the impact of these experiences on career and college major choices and retention in the science career pipeline. Perception and impact varied on the basis of career choice fluctuation (i.e., static science; dynamic science; non-science-to-science; static non-science and science-to-non-science changers). Influence varied in strength among the various career fluctuation groups in relation to college major, career choice and retention in the science pipeline.</p>	50 MIN	Regular Session
L	Snyder, Scott	<p>Better rubrics, shorter tests, and remembering when my kids were in kindergarten</p> <p>Three critical issues in assessment in mathematics and science are: the use of rubrics, designing efficient and valid objective tests, and the assuring the clarity of grading systems. This presentation will discuss psychometric and practical recommendations relating to designing rubrics, more efficient objective exams, and reporting student performance. The content is appropriate for school and university teachers interested in examining and improving their assessment practices.</p>	50 MIN	Regular Session
		Saturday 8:30AM-9:55AM		
G	Colston, Nicole	<p>Debate Across the Curriculum: Strategies for the Science Classroom</p> <p>This workshop will highlight the benefits to using debate and role-playing activities in the science classroom. Participants will leave with a basic understanding of debate as a process, including strategies for both implementing and grading student-led debates.</p>	90 MIN	Workshop
J	Coleman, Juliana; & Gray, Karen	<p>I taught it. They didn't get it. Now what?</p> <p>This session will focus on the basic principles of Response to Instruction (RtI) as well as incorporating and managing Tier II strategies within the classroom.</p>	90 MIN	Workshop

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Koehler, Catherine; Binns, Ian C.; & Bloom, Mark	<p>Exploring Films, Nature of Science and Scientific Inquiry</p> <p>This study explores the development of an instrument to analyze nature of science (NOS) and scientific inquiry (SI) as portrayed in mainstream films. We chose two films, Contact & Twister, to investigate the following research questions; how do films present NOS and SI? and how can these films be used in a classroom to address aspects of NOS and SI? Using a qualitative methodology, we examined the number of occurrences where NOS and SI are observed and we developed a tool to the measure frequency of each. During the session, the methodology and results will be discussed.</p>	90 MIN	Workshop
		Saturday 9:30AM-10:55AM		
E	De Groot, Cornelis	<p>Teaching for Mathematical Structure: Equivalence and the Identity Properties</p> <p>In this workshop, grade 5-12 inservice and preservice teachers are invited to explore the central idea of equivalence in mathematics and the deep structural connections to the identity properties in a hands-on manner. Presented strategies can be implemented in the classroom immediately. All activities will be presented in the context of the Common Core State Standards for Mathematics, with an emphasis on vertical curricular connections.</p>	90 MIN	Workshop
		Saturday 9:30AM-9:55AM		
I	Dominick, Ann	<p>Successes and Challenges of the Greater Birmingham Mathematics Partnership</p> <p>The Greater Birmingham Mathematics Partnership was funded by the National Science Foundation beginning in 2004 as a partnership among eleven Birmingham area school districts, the University of Alabama at Birmingham, Birmingham Southern College, and the Mathematics Education Collaborative, a Washington state-based non-profit which provides support to education communities to improve mathematics instruction.. This partnership was designed to improve mathematics education in the greater Birmingham region and to contribute to better mathematics teaching and learning beyond. This presentation will give specifics of the successes and challenges of this research effort.</p>	25 MIN	Research Presentation
L	Snyder, Scott	<p>“Technology is effective if...”</p> <p>This session will introduce participants to a taxonomy for evaluating and describing the effectiveness of various instructional technologies. The taxonomy will be introduced and illustrated with a range of technological applications currently available in schools and universities.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Saturday 10:00AM-10:25AM				
I	Hodges, Georgia	<p>Creating and Evaluating Novel Instructional Materials to Assess Higher Order Thinking in Science This study investigated the varying ways that students develop and display higher order thinking skills and scientific content knowledge gains during an inquiry based interactive case study developed by a collaborative team of scientists, science educators, computer technologists, and others. Both qualitative and quantitative data were analyzed from high school students (n=200) to develop rubrics and a learning progression map that highlights the relationship between higher order thinking skills, the practices of scientists, and scientific content development. This session will examine the processes and well as the products produced through this research.</p>	25 MIN	Research Presentation
K	Snyder, Scott	<p>The point system in grading...challenges and alternatives Teachers in various grades use a cumulative point system as the strategy for determining semester or course grades. This system requires a number of psychometric and instructional assumptions that may not be met during a typical grading window. This presentation will summarize some of the challenges associated with the use of the point system for grading in mathematics and science, and introduce methods for improving the point system and more valid alternatives to the point system.</p>	25 MIN	Research Presentation
Saturday 10:00AM-10:55AM				
G	Dobbs-Black, Leah	<p>Newly Arrived ELLs – Is Math really a universal language? Mathematics is taught world-wide, but did you know that not everyone around the world learns math concepts and standards in the same order or manner that we do in the United States? Elementary students have been impacted by a shift to an inquiry based model of math instruction. But also consider the impact of differences in curriculum design and mathematics procedures from country to country and region to region around the world.</p>	50 MIN	Regular Presentation
Saturday 10:00AM-11:25AM				
D	Zimmerman-Brown, Veronique; & Layton, Carla	<p>“Need to Knows”: Inclusive Practices and Secondary Teachers Special Education and Section 504 mandates have forever changed the face of secondary classrooms. This workshop centers on the “Need to Knows” for secondary teachers in providing services for students with special needs. Topics of discussion will include targeted accommodations and modifications, problems solving teams, professional development, consultation versus co-teaching, working relationships with faculty partners, and the importance of secondary teacher input.</p>	90 MIN	Workshop

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
F	Riley, Carolyn; & Figgins, Linda	<p>Science and Literature</p> <p>This session will provide elementary teachers with concrete ideas of how to find science concepts in literature. Examples of how to identify a science concept will be offered for each piece of literature. Finally each participant will be asked to work with a team to write a 5E lesson based on the identified science concept. All lessons will be shared electronically with all in the session.</p>	90 MIN	Workshop
J	Radford, Beverly; & Dawson, Joan	<p>A Peek at The Private Eye</p> <p>Experience the hands-on, interdisciplinary Private Eye process created by Kerry Ruef, a program about the drama and wonder of looking closely at the world around you, thinking by analogy, changing scale, and theorizing. No matter what content area or grade level, you will learn how The Private Eye's simple tools produce "gifted" results. The Private Eye Habits of Mind provide students with the essential thinking skills needed to negotiate our 21st century world and are tools they will use for the rest of their lives.</p>	90 MIN	Workshop
L	Dominick, Ann	<p>What Do the Common Core Standards for Mathematical Practice Look Like in the Classroom?</p> <p>This is an interactive session that takes a practical look at what the Common Core State Standards (also known as the Alabama College and Career Readiness Standards) for Mathematical Practice look like in the classroom. Specific examples from Kindergarten through 8th grade will be used to help participants envision what students in classrooms practicing these standards will be doing as they are learning and doing mathematics.</p>	90 MIN	Workshop
Saturday 10:30AM-10:55AM				
K	Chamblee, Gregg	<p>3 – 5 Mathematics Common Core Implementation: A US DOE MSP Project</p> <p>Session will discuss the content preparation of Grades 3 – 5 teachers to teach Common Core Georgia Performance Standards; Discussion of Georgia timeline for Common Core implementation; Participant LMT – Number Sense data will be presented and discussed; Instructor made content test data will be presented and discussed; and Teacher data about how their grade content standards changed in the transition from Georgia Performance Standards to Common Core Georgia Performance Standards.</p>	25 MIN	Research Presentation

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
Saturday 10:30AM-11:25AM				
I	Quebec-Fentes, Sarah; & Bloom, Mark	<p>Pedagogical Approach for Conflict Navigation in Pre-Service Teacher Preparation</p> <p>A major goal of teacher preparation programs is to help pre-service teachers approach their coursework from the perspective of a classroom teacher. However, this objective often conflicts with pre-service teachers perceptions of their role as a student. If this conflict is acknowledged and addressed by teacher educators, further conflict between the expectations of the pre-service teachers and the expectations of teacher educators can be averted. This presentation discusses a pedagogical approach, in the context of a science for elementary teacher's course, which focuses on helping pre-service teachers navigate their dual role as a student and future teacher.</p>	50 MIN	Regular Presentation

Saturday 11:00AM-11:25AM				
K	Mayer, John; Bond, William O.; & Cosper, David J.	<p>Euclidean Geometry Rediscovered</p> <p>For many students of the first author's generation, particularly the visual thinkers, Euclidean geometry was the first course in which the beauty of mathematics became apparent. The idea that this wealth of knowledge could be deduced from a small set of truths (the axioms) was exhilarating. In his Introduction to the Instructor Edition of his notes, <i>Euclidean Geometry – a Guided Inquiry Approach</i>, David M. Clark explains the reasons for, and laments, the loss of this beauty to generations of students; his notes are the remedy. My assistants and I rediscovered geometry, along with our students, through teaching an undergraduate Euclidean geometry course in the Fall 2011 semester based upon David Clark's notes.</p>	25 MIN	Research Presentation

Working Lunch: Boxed Lunch Roundtable & Poster Sessions	East Meeting Room: MH	11:30AM-12:50PM
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Saturday 11:30AM-11:40AM	
PICK UP BOXED LUNCH	
11:40AM-1:00PM	
MH	LUNCH WITH ROUNDTABLES AND POSTER SESSIONS

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
MH	Kalchman, Mindy; & Kozoll, Richard	<p>Teaching Dual-Content Mathematics and Science Methods Courses: Issues and Considerations</p> <p>Mathematics and science are often perceived as inextricably linked, leading to a single combined methods course in many early childhood teacher preparation programs. However, this emphasis on an integration of the disciplines neglects their conceptual, procedural, epistemological, and pedagogical differences. To explore the similarities and differences of teaching mathematics versus science methods courses, we collaborated on teaching a combined course. In our session, we will discuss our collaboration and share that despite finding similarities, the differences outweighed them. We recommend faculty collaboration on dual content-area methods classes so that prospective teachers' understanding of the pedagogical and instructional differences is developed.</p>	1 Hour 20 min	RTS
MH	Williams, Janet B.; & Vlock, Dana R.	<p>Science, Service Learning and Success</p> <p>Integrating science with service learning provides students opportunities for authentic learning, practicing good citizenship and strengthening communities. All of these benefits lead to the outcome of students becoming scientifically literate individuals capable of solving problems "the goal of all science education". Reaching the goal equals success. Teachers and students in the Youngstown, Ohio area, working with The American Chestnut Foundation, are committed to helping restore a species to benefit the environment, wildlife, and society. This presentation will focus on the service learning science project, and includes descriptions of the partnership, the project's development and implementation.</p>	1 Hour 20 min	RTS
MH	Zambo, Ron	<p>Discussion About Mathematics Problem Solving and Critical Thinking in the Elementary Grades</p> <p>Problem solving is at the heart of mathematics and mathematical problem solving; however, for many, classroom practices are more aligned with the acquisition of skills. The Common Core Standards are a giant step forward in the effort to refocus mathematics instruction on problem solving and reasoning. The purpose of this session is to provide participants an opportunity to discuss the pros and cons of the potential influence of the Common Core Standards on classroom instruction.</p>	1 Hour 20 min	RTS
MH	Metty, Jane; Whatley, Clemmie; & Emanuel, Kimberly	<p>SMILE2: Training teachers to seamlessly integrate math and science</p> <p>This session highlights the successes and the challenges that resulted from a year-long professional learning experience. This partnership between Mercer University and Henry County Schools engaged seventy-three K-12 math and science teachers who trained together to learn math and science content and practices as well as constructivist pedagogy with these three outcomes in mind: (1) identify areas of seamless integration & close the gaps created when math and science are taught in isolation, (2) increase content capacity in both disciplines and (3) reform practice to seamlessly integrate math and science.</p>	1 Hour 20 min	RTS

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
MH	Chapman, Geneva	<p>Classroom Practices That May Close Both Achievement Gaps Hindering U.S. Students</p> <p>Closing the achievement gap between minority/low-income students and average students in the U.S. remains an educational priority (Winerman, 2011). In addition to the achievement gap in the U.S., average American students lag behind students in a number of European and Asian (Friedman and Mandelbaum, 2011). Both achievement gaps threaten the futures of our students, many of whom are not prepared for college or work, and America's future in the global economy (Wagner, 2010). Efficient classroom practices motivating students to learn already in use can provide a pedagogical framework on which to base curriculum standards to close both achievement gaps.</p>	1 Hour 20 min	Poster
MH	Dumas, Hardray; & Jarrett, Olga	<p>Historical Trends in Science/Mathematics Integration in the Journal School Science and Mathematics</p> <p>Increased focus on testing, benefits to cognition, tighter schedules, and more awareness are just some of the reasons science and mathematics integration has gained attention in U.S. schools. Integrating these two disciplines has a long history in the journal School Science and Mathematics. The purpose of this paper/poster is to present the issues and themes concerning science and mathematics integration found through an archival search of School Science and Mathematics. Various types of integration were identified, including discipline specific, content specific, process, methodological, and thematic integration, but little experimental research was identified. This study will identify historical trends.</p>	1 Hour 20 min	Poster
MH	Koehler, Catherine; Binns, Ian C.; & Bloom, Mark	<p>How Films Can Alter Preservice Students' Conceptions of NOS & SI</p> <p>This study provides evidence to support the use of films in understanding of NOS and SI. Peoples' perceptions of scientists are stereotypical. In a draw-a-scientist test (DAST), they resort to drawing a white male with crazy hair wearing a lab coat working in a lab. Attempts to change students' perceptions of scientists have shown marked improvements on post-DAST scores. In this study, we use an explicit/reflective approach to demonstrate alternative conceptions of scientists as portrayed in three mainstream films. Using a pre-post design, preservice students demonstrated statistically significant change in their conceptions of the scientists as measured by the DAST.</p>	1 Hour 20 min	Poster

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
MH	Noblitt, Bethany; & Foletta, Gina	<p>Teacher Views of the Nature of Mathematics This research explores the different conceptions of the nature of mathematics exhibited by secondary mathematics teachers as they taught in the mathematics classroom and as they worked through a mathematical task-based interview. Our results indicate that some of the teachers' views of the nature of mathematics change as they take on different roles. For example, the views of mathematics they exhibit as teachers of mathematics may differ from the views they exhibit as doers of mathematics. This poster highlights some of the findings of this qualitative study and poses further questions regarding teachers' views of the nature of mathematics.</p>	Poster	Poster

Saturday Afternoon Sessions November 10, 2012

1:00PM-2:30PM

D	Emenaker, Charles; Wood, Krista E.; Darling, Natalia; & Kramer, Gene F.	<p>Take a PC Tablet to Boost eSupport for Students Tired of a classroom where there is too little time to do what needs to be done? How do you provide extra help to students without using precious class time? Using a tablet PC, you can increase your flexibility in the classroom; provide students with digital means of review, assessment and virtual support when face-to-face help is not possible. Participants will have the opportunity to learn inking, screen capture and screen casting with various software including Microsoft OneNote and PowerPoint. Tablet PCs will be available for participant use during the workshop.</p>	90 MIN	Workshop
E	Smith, Pamela K.	<p>Fun and Games...In Math Class? In this workshop, participants will play several games and puzzles, and will discuss whether such activities have a legitimate place in the mathematics classroom. We will discuss questions like, "Where's the math in this activity?" "For what grade level(s) is this activity appropriate?" "Could I adapt this activity to make it more approachable or more challenging?" Each participant will "play" with at least 6 different activities. Several games and puzzles will be given out as door prizes. Arrive ready to play...and learn!</p>	90 MIN	Workshop
F	Lampley, Sandra; Kent, Chatoria; & Rowell, Ginger	<p>Teaching Inquiry, Engineering Design, and Embedded Mathematics in Biology Using NASA Resources Enhance your biology curriculum with powerful and relevant resources from NASA Education that encourage critical thinking while integrating inquiry, engineering design, and/or embedded mathematical concepts into the science classroom. In this hands-on workshop, participants will explore the abundance of NASA educational teaching materials while creating lessons that integrate the key dimensions of the new standards. At the end of the session, teachers will leave with multiple lessons that offer inspiration for the next generation of science and engineering professionals and scientifically literate students.</p>	90 MIN	Workshop

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
G	Kinzer, Cathy; Bradley, Janice; Muzon, Rey; Parra, Tina; & Rincon, Mari	<p>Teacher Leadership in the Era of Common Core State Standards Mathematically Connected Communities-Leadership Institute For Teachers (LIFT) project is a four-year research partnership between NMSU and NM school districts. LIFT provides courses and opportunities to develop teacher leadership knowledge/skills and obtain a MAT degree. The MC2-LIFT courses and school-based efforts are collaboratively designed and taught by mathematicians, mathematics educators, and teacher leaders. Teacher Leaders will share: How math teacher leaders define their roles within their own contexts for leading and learning in mathematics; The strategies used to support the implementation of Common Core Standards for Mathematics; and, The impact of their efforts on teacher, student, and their own learning.</p>	90 MIN	Workshop
I	Khaliqi, David; & Decker, Lisa	<p>Teachers STEMing Out! Lessons Learned from a University and K-12 Educator Collaboration In light of the current trend of students entering STEM after high school and limited resources for educators to provide extracurricular STEM enrichment programs, collaborating with community resources is becoming increasingly salient. This session reports on the collaboration between K-12 schools and the Center for STEM Education at the University of Colorado to provide middle and high school students with engaging after-school STEM activities. This session focuses on the nature and origin of the collaboration between these two entities and how teachers can implement similar programs. Additionally, examples of the activities and results of the students' perceptions are presented.</p>	90 MIN	Workshop
J	Smith, Gayle; & Koffel, W. Greg	<p>Statistics and Engineering: The Reese's Peanut Butter Cup of your STEM program Participants will examine collaborative units between Statistics and Engineering classes. Methods of teaching Regression, Experiment Design, and Inference through real world applications in various fields of engineering will be presented. The role of statistical analysis in determining the safety and viability of engineering projects will be explored as participants investigate applications. Specific project ideas that motivate student learning through active involvement will be shared by presenters and critiqued by participants. We believe that collaboration across the curriculum can increase student content knowledge and appreciation for Statistics and that student's motivation increases when they are actively involved in problem situations.</p>	90 MIN	Workshop

Room	Author(s)	Session Title/Abstract	Session Length	Session Type
K	Copes, Brian	<p>Brian Copes PEOPLE Magazines 2012 Teacher of the year. Not only are the students learning valuable Science, Technology, Engineering and Mathematic (STEM) skills, but they are learning community service as they give of their time and talents to people groups that they will probably never meet. Through these projects, these students learned they could radically change the lives of people around the world. Come and learn about exciting project based learning activities that can be implemented into your curriculum.</p>	90 MIN	Workshop
L	Wu, Zhonghe; & An, Shuhau	<p>Camtasia Relay technology improves online teaching and learning mathematics: Introduction and demonstration Teaching mathematics and mathematics education courses online with mandating the recording of lectures has become a useful tool for online teaching. With special requirement for mathematics teaching and learning, Camtasia Relay is a tool that allows recording of any screen movement. This presentation will provide classroom examples of Camtasia Relay usage to establish positive relationships, interact with the class, and follow good practice in lecture recording. Participants will be learning what, why, how, when, and where that Camtasia Relay can be used for improving the mathematics teaching and learning.</p>	90 MIN	Workshop



Committee Member Appointments

Awards and Endowment

- Zhonge Wu, Chair 2010-2013
1. Elaine Tuft 2009-2012
 2. Mary Sowder 2009-2012
 3. Patricia O'Donnell 2010-2013
 4. Sandra Browning 2011-2014
 5. Pat Hernandez 2011-2014
 6. Adrienne Redmond 2011-2014

Conventions

- Lynn Columba, Chair 2011-2014
1. Susan Cooper 2009-2012
 2. Shelia Pirkle 2009-2012
 3. Ann Rethlesen 2009-2012
 4. Julie Angle 2009-2012
 5. Cheng-Yao Lin 2009-2012
 6. Kathy Mittag 2010-2013
- Juliana Utley, Ex-Officio
Melanie Shores, Birmingham 2012
Sandi Cooper, San Antonio 2013

Finance

- John Park, Chair 2011-2012
1. Carolyn Riley 2009-2012
 2. Tricia Kerr 2009-2012
 3. Sandi Cooper 2010-2013
 4. Maggie Niess 2010-2013
 5. Timothy A. Laubach 2011-2014
 6. Jim Telese 2011-2014
- Julie Thomas, Ex-Officio

Membership

- Suzanne Nesmith, Chair 2011-2014
1. Helen P. Gerretson 2009-2012
 2. Mary Shafer 2010-2013
 3. Mary Margaret Capraro 2010-2013
 4. Molly Weinburgh 2010-2013
 5. Almir Smajic 2011-2014
 6. Stacy Reeder 2011-2014

Nomination and Election

- Georgia Cobbs, Chair 2009-2012
1. Kevin Wise 2009-2012
 2. Sarah Ramsey 2010-2013
 3. Ken Miller 2011-2014
 4. Diane Schmidt 2011-2014
 5. Alan Zollman 2011-2014
 6. Margaret Mohr 2011-2014

Policy

- Ron Zambo, Chair 2010-2013
1. Pat Lamphere-Jordan 2009-2012
 2. Sue Brown 2010-2013
 3. Robert Capraro 2010-2013
 4. Catherine Kelly 2011-2014
 5. Robert Cappetta 2011-2014
 6. Tommy Smith 2011-2014
- Don Balka, Ex-Officio

Publications

- Melanie Shores, Chair 2011-2012
1. Judy Beauford 2009-2012
 2. Linda Zientak 2010-2013
 3. Robert Reys 2010-2013
 4. Sharon Taylor 2010-2013
 5. Trena Wilerkson 2011-2014
 6. Phillip Kisunzu 2011-2014
- Gilbert Naizer, Ex-Officio, Newsletter Editor
Carla Johnson, Ex-Officio, SSMA Journal Editor

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School Science and Mathematics Association

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School of Education, Baylor University

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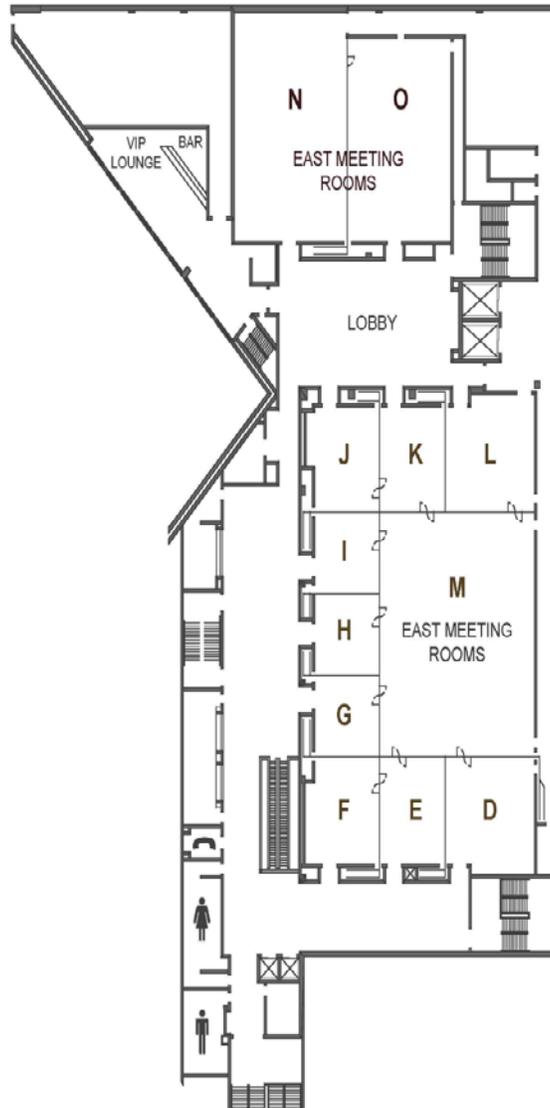
Top 10 Things to do/see in Birmingham (on your own...)

Thing to Do/See	Address	Phone	Link	~ Cost	Notes
Birmingham Zoo	2630 Cahaba Road, Birmingham, AL 3522	205-879-0409	www.birminghamzoo.com	Adults - \$14* Children 2 - 12 years old -\$9* Senior Citizens 65 years+ - \$9*	Open Daily 9AM- 5PM
Vulcan Park and Museum	1701 Valley View Drive, Birmingham, AL 35209	205-933-1409	www.vulcanpark.org	\$6 Adults; \$5 Seniors (65+); \$4 Children ages 5-12; Children 4 years and under are admitted free. Evening Admission Rates (plus tax) 6 - 10 pm ; \$3 all ages 5 and up	Vulcan park grounds open daily, 7am- 10pm. Museum open M-S, 10am- 6pm; Sun, 1pm- 6pm
Alabama Sports Hall of Fame and Museum	2150 Richard Arrington Jr. Blvd N, B'ham, AL 35203	205-323-6665	ashof.org	\$5 Adults; \$4 Senior Citizens (60 and over); \$3 Students; \$14 Families Groups of 10 or more get \$1 off each admission.	M-F, 9am-5pm
Birmingham Civil Rights Institute	520 16th Street North Bham, AL 35203	205-328-9696	www.bcri.org	Adults \$12; Groups (25+ adults) \$9; Seniors (age 65+) \$5; *	Open Tue- Sat, 10am- 5pm; Sun, 1pm- 5pm
Birmingham Museum of Art	2000 Rev. Abraham Woods Jr. Blvd. North Bham, AL 35203	205-254-2565 205-254-2566	www.artsbma.org	General Museum Admission is FREE	Open Tue- Sat, 10am- 5pm; Sun, noon- 5pm
McWane Center	200 19th Street N Bham, AL 35203	205-714-8414	www.mcwane.org	Museum: Adults \$12, Kids 2-12, \$9, under 2 FREE; Museum & IMAX: \$17, \$13 and under 2 FREE;	Open Sept- May, M- F, 9am- 5pm; Sat, 10am- 6pm; Sun, noon- 6pm;
Robert Trent Jones Golf Trail	Oxmoor Valley Course, 100 Sunbelt Pkwy, Bham, AL 35211	205-942-1177 800-949-4444	www.rtgolf.com	Fees starting at \$52; Short Course Greens Fees, \$18 for 18 Holes	Call for tee times.
Barber Motorsports Park	6040 Barber Motorsports Parkway Leeds, AL 35094	205-699-7275	www.barbermotorsports.com		
Riverchase Galleria	3000 Riverchase Galleria, Suite 1000 Hoover, AL 35244	205-985-3020	www.riverchasegalleria.com	N/A	M-Sat: 10:00am- 9:00pm; Sun: 12:00pm- 6:00pm
Talladega Superspeedway	3366 Speedway Boulevard Talladega, AL 35161	256-362-9064 877-G02DEGA	www.talladegasuperspeedway.com		

COMPLEX MAP



EAST MEETING ROOMS 3RD FLOOR



PROGRAM AT A GLANCE: THURSDAY, NOVEMBER 8, 2012

	EMR D ASSESSMENT	EMR E CURRICULUM	EMR F INQUIRY	EMR G PROFDEV	EMR I RESEARCH	EMR J TEACHING	EMR K SPECIALS	EMR L TECHNOLOGY	EMR MH
8:00AM REGISTRATION									
8:30-9:20AM OPENING SESSION									SSMA PRESIDENT; Ann Dominick (SOE); KEYNOTE SPEAKER: CONSTANCE KAMII
9:30AM-9:55AM		SUBRAMANIAM	ZOLLMAN	CLARY	ANGLE	CONRADY	JOHNSON, C.	STUESSY	
10:00AM- 10:25AM	MOHR- SCHROEDER	COVERT	PARK	IVEY	BERLIN	WEST	MOSELEY, L.J.	ROY	
10:30AM- 10:55AM		MILLMAN		FIGGINS		UTLEY		SCOGIN	
11:00AM- 11:25AM	IVEY	EVANS	LAUBACH	COLSTON	LIU	BARROW		WUEBKER	
11:30AM- 11:55AM			SAHIN		THOMPSON		JOHNSON, C.	L.J. MOSELEY	
12:00PM-1:00PM LUNCH(ON OWN)									
1:00PM-1:25PM	ADAMS	JAMES	CLARY	KENT	EVANS	SAHIN		BRANDON	AMSTI
1:30PM-1:55PM		KELLY	WOOD	WATSON	JOHNSON, C.		REDMOND		
2:00PM-2:50PM	DARLING	BALKA		BERTRAM		COLUMBA	BARKER	SAYLOR	AMSTI FACILITIES TOUR
2:50PM-3:10PM	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	
3:10PM-4:00PM	FANG	AN	REEDER	DOUGLASS	RADFORD, D.	KHALIQI	COBBS	WILSON	
4:10PM-5:00PM		CASSEL	BLESSING	MITCHELL	WANGLE			THROWER	
5:05PM-5:50PM COMMITTEE MEETINGS	Awards & Endowment Committee	Conventions Committee	Finance Committee	Membership Committee	Nominations & Elections Committee	Policy Committee		Publications Committee	
6:30PM RECEPTION/ SSMA AWARDS	BIRMINGHAM	CIVIL	RIGHTS	INSTITUTE	AND	MUSEUM			

**25MIN=BLUE; 50MIN=GREEN; AMSTI (ALABAMA MATH, SCIENCE, AND TECHNOLOGY
INITIATIVE PRESENTATION AND FACILITIES TOUR)**

PROGRAM AT A GLANCE: FRIDAY, NOVEMBER 9, 2012

	EMR D ASSESSMENT	EMR E CURRICULUM	EMR F INQUIRY	EMR G PROFDEV	EMR I RESEARCH	EMR J SPECIALS	EMR K TEACHING	EMR L TEACHING	EMR MH
8:00AM REGISTRATION									
<i>8:15AM-9:20AM</i>									BUSINESS MEETING
9:30AM- 9:55AM	CAPRARO, M.		SABEL	WHITE	HANEGAN	COCHRAN	CIFARELLI	PITTS	
10:00AM- 10:25AM	CAPRARO, R.	SAHIN	PARK	ZOLLMAN	POWELL	ZIMMERMAN- BROWN	BEAUFORD		
10:30AM- 10:55AM	O'DONNELL	WEINBURGH		BARNES		MCCLINTOCK	AKGUN		
11:00AM- 11:25AM	WATSON	COOPER	BRAWNER	BALKA	SAHIN	STUESSY			
11:30AM- 11:55AM	CHEN		ZOLLMAN- PAST PRESIDENT		ADAMS			HOLBERT	
12:00PM- 1:30PM LUNCHEON/ KEYNOTE									<i>Welcome from Birmingham Mayor; Introduction of Keynote by Dr. J. MICHAEL WYSS(UAB CORD); KEYNOTE: LARRY DELUCAS</i>
1:30PM- 1:55PM	MICHAM	SMAJIC		CAVLAZOGLU	BLAUDEAU	BROWN, S.	WAGNER- KRANKEL	MATNEY	
2:00PM- 2:25PM	BANES	LAMPHERE- JORDAN	SMITH, T.	PERKINS	MOSELEY, C.		VARGHESE		
2:30PM- 3:20PM	SNYDER	YANTZ	REEDER	WATSON	HU	O'NEAL(25)	STOTZ	NESMITH	
3:20PM-3:40PM	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	BREAK	
3:40PM- 4:05PM		CHOI	YANTZ	DE LA CRUZ	GADDY	WALTON		GILL	
4:10PM- 5:00PM		PARRISH	SMITH- WALTERS		SASSON		TUFT	MCCOOMBS	
5:05PM- 5:50PM COMMITTEE MEETINGS	<i>Awards & Endowment Committee</i>	<i>Conventions Committee</i>	<i>Finance Committee</i>	<i>Membership Committee</i>	<i>Nominations & Elections Committee</i>		<i>Policy Committee</i>	<i>Publications Committee</i>	
5:30PM- 9:30PM	**OPTIONAL	MCWANE	SCIENCE	CENTER	TOUR	AND	DINNER		

25MIN=BLUE; 50MIN=GREEN

PROGRAM AT A GLANCE: SATURDAY, NOVEMBER 10, 2012

	EMR D ASSESSMENT	EMR E CURRICULUM	EMR F INQUIRY	EMR G PROFDEV	EMR I RESEARCH/ ASSESSMENT	EMR J TEACHING	EMR K SPECIALS	EMR L TECHNOLOGY	EMR MH
7:30AM REGISTRATION									
8:00AM- 8:25AM	TUCKER- WORKSHOP	TERRY	BONNER		MCCALL- WORKSHOP	BOGAN	SEFTON	STUESSY	
8:30AM- 9:25AM		CALHOUN	PAPADIMITRIOU	COLSTON- WORKSHOP		COLEMAN/ GRAY- WORKSHOP	KOEHLER- WORKSHOP	SNYDER	
9:30AM- 9:55AM		DE GROOT- WORKSHOP			DOMINICK			SNYDER	
10:00AM- 10:25AM	ZIMMERMAN- BROWN- WORKSHOP			RILEY- WORKSHOP	DOBBS- BLACK	HODGES	RADFORD, B. WORKSHOP	SNYDER	DOMINICK - WORKSHOP
10:30AM- 10:55AM					QUEBEC- FENTES	CHAMBLEE			
11:00AM- 11:25AM						MAYER			
*11:30AM- 11:40AM	*****	PICK UP A	BOXED LUNCH	AND	CHOOSE A	ROUNDTABLE	TO JOIN	*****	
11:40AM- 1:00PM Working Lunch <i>Roundtables and Poster Session</i>									BOXED LUNCH ROUNDTABLES KALCHMAN WILLIAMS ZAMBO METTY, J. POSTER SESSIONS: CHAPMAN DUMAS KOEHLER NOBLITT
1:00PM- 2:30PM	ENMAKER- WORKSHOP	SMITH, G- WORKSHOP	LAMPLEY- WORKSHOP	KINZER- WORKSHOP	KHALIQI- WORKSHOP	SMITH, P.K.- WORKSHOP	COPE- WORKSHOP	WU- WORKSHOP	

25MIN=BLUE; 50MIN=GREEN; 90 WORKSHOPS=RED