

8:00 - 8:50	Carson 1	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Teacher Created Multiple-Choice Assessments and the Use of Assessment Data for Planning Instruction	Sue Brown	University of Houston-Clear Lake
1	Purpose		
	Twenty teachers participated in a two-year externally funded grant and the second year of the grant focused on creating multiple-choice assessments similar to state required assessments. Teachers, in groups of six, created measurement test items for their grade level, and the group members reviewed the items and created a diagnostic assessment. Each teacher administered the test prior to teaching the measurement unit and test data were used to plan instruction. At the end of the unit, the same test was used as a posttest. Session participants will create assessment item(s) and will review teacher assessment portfolios noting pre/post test data and discussion as well as activities used with students.		

8:00 - 8:50	Carson 2	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Innovative Pedagogical Strategies to a Complex Probability Problem Based on Student Responses	Sudi Balimuttajjo Robert J. Quinn	University of Nevada, Reno
2	Purpose		
	Probability remains a pedagogically problematic topic in mathematics both at the primary and secondary levels due to the abstract expressions and complex terms often involved. In this study, a probability problem involving the disjunction of two independent events was given to a group of mathematics majors enrolled in a four-year university. Despite having already taken a class in probability, almost half of these students answered incorrectly. Analysis of the responses revealed four major categories of errors. This presentation will describe a variety of pedagogical strategies developed as a direct result of analyzing these students' solutions. These strategies are designed to better prepare students for such problems. Strategies include: using a distance analogy; using a playing card analogy; considering the order of event occurrence; determining the probability that neither event occurs; and analyzing a joint probability distribution table. Illustrations and explanations are provided for each of these five strategies that make the problem solving procedure more plausible and the theory more accessible. Each strategy forms a unique alternative approach, but taken together, they provide for a deeper understanding of the underlying probabilistic concepts. These strategies also build on each other to form a progressive sequence of learning experiences.		

8:30 - 8:55	Crystal 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Urban School Reform Enabled by Transformative Professional Development: Impact on Teacher Change and Student Learning of Science	Carla Johnson	University of Cincinnati
Purpose			
3	<p>This longitudinal study of middle school science teachers explored if a teacher participation in the TPD program resulted in change in instructional practice, as well as a significant increase in student learning. Four participating schools were matched and randomly assigned to intervention and control groups. Teacher and student outcomes were compared. Eight teachers from Bryce and Zion Middle Schools participated in the two-week summer institute, followed by monthly release day professional development sessions focused on implementing instruction outlined in the National Science Education Standards. Student achievement was assessed using the pre/post instruments. Students of teachers at treatment schools experienced significantly larger gains than students at the control schools. TPD intervention teachers experienced increase in teaching effectiveness. Findings in this study revealed the positive impact that whole-school, sustained, collaborative, professional development programs have on improving teacher practice and student achievement at the school level.</p>		

8:00 - 8:50	Crystal 4	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Tardigrade	Li-Ju Chen	Jacksonville State University
Purpose			
4	<p>Tardigrades, also known as Water Bears, are ubiquitous microscopic invertebrates found in terrestrial and marine environments. These organisms have several desirable features that make them ideal candidates for use in education. They are visually interesting, can be collected easily or purchased inexpensively and include a captivating life story. Here we explore the methods and benefits of utilizing tardigrades in science education. Specially, we detail their collection, identification, and use in studies dealing with ecology, morphology, and phylogenetic analysis.</p>		

9:00 - 9:50	Carson 1	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Progressive Field Experience Model (PFEM): A Bridge from Early Observation to Active and Sustained Teaching	Kim Bilicia Elsa Ruiz	University of Texas at San Antonio
	Purpose		
5	<p>Teacher educators agree that pre-service teachers' experiences in the field classroom shape the manner through which they view their own instructional tendencies and beliefs about student learning (Graham, 2005; Graham, 2006; Hancock, 2004). Interactions with expert mentors and the students in the classroom provide a working canvas upon which pre-service teachers draw their own sense of professional belonging (Feiman-Nemser, 2001). Progressive Field Experience Model (PFEM) is a progression into teaching that guides candidates' experiential growth over a 10 week advanced field experience. The aim was to help teacher candidates develop a confidence and competence regarding their professional identities prior to student teaching. PFEM was also designed to address some additional needs within the certification program, such as (a) emphasize experience over accumulation of 'hours' in the field; (b) grow connections between mentor teachers and university instructors; (c) provide a common set of expectations between the candidate, mentor teacher, and university instructor; and (d) encourage ongoing conversations and reflections between the mentor, candidate, and instructor, emphasizing skills and dispositions required for successful teaching. Data collected during 2008-2009 PFEM pilot year will be shared.</p>		

9:00 - 9:50	Carson 2	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Using NAEP Data to Improve Preservice Teachers Understanding of Fractions	Tracy Goodson-Espy Kathleen Lynch-Davis Tracie McLemore Salinas Art Quickenton	Appalachian State University
	Purpose		
6	<p>This session will describe results from a NSF project, North Carolina NAEP: Improving Mathematics Content and Methods Courses. The project uses data from the National Assessment of Educational Progress (NAEP) and professional development materials developed from analyses of these data, Learning from NAEP: Professional Development Materials for Teachers of Mathematics (Brown & Clark, 2006) to develop instructional modules for preservice elementary and middle school teachers. These modules are intended to help preservice undergraduate elementary and middle school teachers: 1) improve their mathematical content knowledge; 2) improve their understanding of how to use effective methods to teach mathematics to children; 3) become aware of the purposes for, and uses of, NAEP; and 4) learn how to use NAEP data to improve their teaching of mathematics. The modules focus on learning to use active and cooperative learning strategies, data visualization, analyses of student work, and understanding NAEP rubrics and procedures for assessing student work. This session focuses on the implementation and evaluation of a module emphasizing the teaching of fractions in an elementary mathematics methods course. Results from a mathematics content test from the Learning Mathematics for Teaching Project and results from a mathematical beliefs for teaching survey (MTEBI) will be discussed.</p>		

9:00 - 9:50 Session	Crystal 1 Title	50 minutes Presenter(s)	SSMA RENO 2009 Affiliation
	Integrated Mathematics and Science Methods Course at the University Level	Linda Figgins Carolyn Riley	Northern Illinois University
Purpose			
7	Two university instructors co-taught an integrated course that balanced science and mathematics content with creative inquiry and critical thinking. In searching for common ground between science and mathematics the instructors were able to make significant connections to the national standards of both disciplines which call for an increase in interdisciplinary instruction. The presentors will explain how assignments complimented both content areas. They will also share their role in the development of this integrated course. Both instructors are currently completing work on their doctorates in integrated studies at Northern Illinois University.		

9:00 - 9:50 Session	Crystal 2 Title	50 minutes Presenter(s)	SSMA RENO 2009 Affiliation
	"Links between the NCTM Process/Assessment Standards and English Language Learners"	Amy Brown Linda Gerena Eileen Ariza Suzanne Lapp	Utah State University New York City College Florida Atlantic University of Florida
Purpose			
8	The numbers tell the story. In schools throughout the country, there are increasing numbers of students whose first language is not English. Generally, K-12 ELL students will appear to be "fluent" within two years of schooling in the US. Therefore, one would assume that such students, with their perceived fluency, would be ready to enter into other grade-level content area courses, such as mathematics, without accommodation. Research with ELLs proves otherwise; it takes ELLs approximately five to seven years in order to master "cognitive academic language proficiency (CALP)" (Cummins 1981), required for success in content classes, such as mathematics. However, there are mathematics strategies within the NCTM's standards that are highly-regarded as best practice in mathematics, and benefit ELLs greatly in the mathematics classroom. The NCTM's Process Standards, and Assessment Standards, can demonstrate links between these standards and what currently exists in the literature as best practice for ELL students. Additionally, a recent review of research with ELLs in the mathematics classroom will be highlighted.		

9:00 - 9:50 Session	Crystal 3 Title	50 minutes Presenter(s)	SSMA RENO 2009 Affiliation
	Learning to Podcast and Podcasting to Learn	Sheila Pirkle	Austin Peay State University
Purpose			
9	In this workshop, the participants will learn how to make a podcast and then create a podcast. This will be enhanced by a discussion of the concept of "podcasting to learn." The example will be a unique strategy employed in two science methods classes, one in Northern Ireland's Queen's University, and one at Austin Peay State University in Tennessee. Science teacher-candidates in both settings formed groups, prepared podcasts on an assigned pedagogical topic, and exchanged the podcasts. After the exchange the students provided feedback and described the relative merits of "podcasting to learn."		

9:00 - 9:50	Crystal 4	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Prospective Elementary Teachers Understanding of Fraction Division	Adrienne Redmond	Oklahoma State University
	Purpose		
10	<p>Researchers have found that beliefs interfere with students ability to learn mathematics. However, few studies have examined prospective elementary teachers' dispositions toward the teaching and learning of division of fractions - which has been described as one of the most difficult concepts to teach in elementary and middle school. This sequential explanatory mixed methods study explored the division of fraction content knowledge, attitudes, and strategy use of 35 prospective elementary teachers before and after an intermediate mathematics methods course. I will present the results of this study and provide suggestions for future research.</p>		

9:00 - 9:50	Crystal 5	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	An Open Conversation About Producing Quality Elementary Mathematics Teacher Education Candidates	Ron Zambo William Speer	Arizona State University University of Nevada, LV
	Purpose		
11	<p>University professors are, too frequently, as isolated as many K-12 teachers with little time to discuss instruction with others in similar situations. At previous School Science and Mathematics Association conferences, educators have broken this isolation by meeting to discuss variations in the manner that different people teach what is essentially the same course, i.e., mathematics methods courses for elementary education majors. Topics that have emerged, to name a few, are: instructional foci, instructors' perceptions of their students' abilities and interests, the role of lesson planning, technology integration, and assessment. This proposed session is intended to invite instructors of mathematics methods courses to a continuing opportunity to share practices, thoughts, and opinions about the preparation of successful teacher candidates in elementary mathematics methods and to learn how others deal with the related issues. Participants may leave feeling validated as they hear others with similar experiences and strategies and will surely leave with new ideas for potential changes to their instruction.</p>		

10:00 - 10:25	Carson 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	How teachers consider cognitive, language and social development when lesson planning	Julie Amador Teruni Lamberg	University of Nevada, Reno
	Purpose		
12	<p>The session will outline a study examining how teachers consider the cognitive, language, and social development of students while planning math lessons, during lesson study. Specifically the decision making process teachers collectively underwent to make decisions regarding student learning and lesson delivery, as it is related to development, will be discussed. Participants will have the opportunity to examine the lesson planning process from the perspective of what can be learned about teacher practice and will understand how teachers jointly made decisions.</p>		

10:00 - 10:25	Carson 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Piaget and Science Discourse: Still Relevant Today	Michael Wavering	University of Arkansas, Fayetteville
	Purpose		
13	In his last book "Toward a Logic of Meanings" Jean Piaget describes how thought can be categorized into a form of propositional logic. The intent of this presentation is to offer this analysis by Piaget as a way to understand the language and teaching of science. Examples from science content and methodologies of teaching that content will be used to illustrate how Piaget's theory of logical thinking are still useful and relevant to science and mathematics educators.		

10:00 - 10:25	Crystal 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	A Family Math Night Provides an Interface Between the School and Community	Dixie Metheny	Montana State University-Billings
	Purpose		
14	As part of the elementary math methods class, students have the option of working in an outreach program such as a Family Math Night. The focus of this presentation is to describe the Family Math Night. The planning and preparation will be described as well as the actual experiences. The activities used are from the Family Math book or from books by Constance Kamii. This experience benefits all of the participants. Parents can become more comfortable working with their children on skills such as learning math facts after observing how approaches to math instruction have changed over the years. The college students are able to work with children and parents in an informal setting. They are able to try out activities and determine how they might use these activities in their own classrooms. Comments and observations from the children, parents and college students will be shared.		

10:00 - 10:25	Crystal 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Relationships Between the Metacognitive Awareness, Teaching Efficacy, and Attitudes of Pre-service Elementary Teachers	Kansas Pope Juliana Utley	Oklahoma State University
	Purpose		
15	Research has taken a close look at various characteristics of the pre-service elementary teacher including their metacognitive awareness, teaching efficacy, and attitudes towards mathematics. It has also been common to discuss the implications of each of these characteristics in the development of the teacher. Because of the impact each characteristic has on their development, it is also important to understand the effect of the combination of these characteristics on the pre-service elementary teacher. This study will discuss relationships found between the metacognitive awareness, teaching efficacy, and attitudes towards mathematics of pre-service elementary teachers and provide suggestions to further understand this relationship and its impact on teacher development.		

10:00 - 10:25	Crystal 3	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Factors Related to Undergraduate Students' Performance and Attitudes in an Entry-Level Mathematics Course	Frank Amankonah Lynda Wiest	University of Nevada, Reno
	Purpose		
16	<p>Mathematics serves as a powerful gatekeeper to higher status, higher pay, and better jobs. We live in a time when the need to understand and use mathematics in everyday life has never been greater. Mathematics is an important tool for many academic areas and everyday contexts. It is thus typical for undergraduate students to be required to successfully complete at least one entry-level mathematics course in order to obtain a bachelor's degree. Many factors, such as positive attitudes, attendance, strong high school mathematics background, high SAT mathematics score, and high Grade Point Average (GPA), account for success in entry-level mathematics courses. This qualitative study involved face-to-face interviews that investigated the perspectives of five undergraduate students and two faculty members in relation to undergraduate students' performance in and dispositions toward an entry-level mathematics course. The findings from this study indicate that student dispositions and cognition do play important roles in teaching and learning mathematics. The data lend support to other research findings in relation to mathematics performance and attitudes. The study has implications for college teachers, undergraduate students, and researchers regarding entry-level mathematics education.</p>		

10:00 - 10:25	Crystal 4	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	The Role University Science Faculty Members Play in the Education of Future Science Teachers	Monica Young John W. Tillotson	Syracuse University
	Purpose		
17	<p>Science faculty members could be considered the unknowing methods instructors of future science teachers. These faculty members serve as models for how to lecture, do demonstrations, lead discussions, give assessments, and engage students. First year teachers tend to rely on teaching methods they have experienced most predominantly in their own science educations, instead of utilizing methods modeled in their preservice science teacher preparation programs. IMPPACT Project researchers interviewed 12 science faculty members, three each in geology, physics, biology, and chemistry, to determine what types of instructional methods they use, how they evaluate and advise students, how the nature of science is portrayed in their classes, and what types of interactions they have with 7-12 grade students and teachers. This presentation will discuss ways in which science faculty members compare with regard to these issues, and how the teaching methods of science faculty members impact the teaching methods of future science teachers using video analysis of first year science teachers' classrooms. Themes will be compared among science content areas and universities.</p>		

10:00 - 10:25	Crystal 5	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Construction and Validation of an Instrument to Measure Attitudes Toward Science Class of Elementary Students in a Traditional Asian Culture	Tzu-Ling Wang	National Taiwan Normal University
18	<p style="text-align: center;">Purpose</p> <p>The main purpose of this study was to develop a valid and reliable instrument for measuring the attitudes toward science class among 4th and 5th grade students in Taiwan. In particular, it was intended to investigate three science attitude scales: science enjoyment, science confidence, and importance of science. In addition, another purpose of this study was to examine the students' attitudes toward science class with respect to the variables, namely gender and grade level of the student. A total of 265 elementary school students in Taiwan responded to the instrument. Data analysis indicated that the instrument developed in this study had satisfactory validity and reliability measure. The Cronbach alpha coefficients for the three scales (ranging from 0.82 to 0.87) and the entire instrument (0.94) indicated a satisfactory level of internal consistency. Use of the combined scales as a general "attitudes toward science class" scale was supported by principal component analysis. Results showed that there were no gender differences and grade level differences in student attitudes toward science class as well as in each of the three scales.</p>		

10:30 - 11:20	Carson 1	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Longitudinal Results on Number Name Project	Judith Beauford Sandra Durden	University of the Incarnate Word
19	<p style="text-align: center;">Purpose</p> <p>A project was begun in 2003 using explicit number names as 4 and 5 year old children were first formally introduced to number and counting. Assessment of children for identification of place value, rote counting, reading, and modeling two digit numbers showed significant differences between children who had used explicit number names and those who used traditional number names. In 2009, children in grades 1 through 3 who had experienced the explicit number names in kindergarten and prekindergarten were assessed for ability to identify place value, read, and model two digit numbers along with their peers who had not participated in the project. Preliminary results show significant differences between the two groups.</p>		

10:30 - 11:20	Carson 2	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	An Elementary Preservice Science Course Investigation: Why science Doesn't Suck!	Andrea Foster	Sam Houston State University
20	<p align="center">Purpose</p> <p>Prospective elementary teachers begin their preservice preparation lacking a strong science content background (Abel & Roth, 1992; Appleton, 1977; Harlen, 1997; Mellado, Blanco, & Ruiz, 1998; Smith & Neale, 1991). Teachers with better content knowledge make greater cognitive demands on their students and can engage confidently and enthusiastically in daily interactive teaching and learning of science with their children through active, hands-on science teaching. (Manner, 2003) This 3-year study explores the impact of a single science methods course that integrates content and pedagogy on elementary preservice teacher's comfort level with science content and science teaching. Findings indicate that a powerful science methods experience indeed does have impact on prospective elementary teacher's science content knowledge and science teaching comfort levels. In addition, although teachers acquire content knowledge from a variety of sources, results indicate that content delivered in the context of an inquiry-based, active-learning environment that can be easily translated into the classroom has the greatest impact not only on the teachers, but also on their teaching and their students' learning.</p>		

10:30 - 11:20	Crystal 2	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Developing a University – School Partnership with a Science-, Mathematics-, and Technology-Based Middle School	Catherine Kelly Barbara J. Frye Leslie Grant	University of Colorado at Colorado Springs
21	<p align="center">Purpose</p> <p>Our work with Galileo Middle School began with culturally responsive teaching and learning professional development seminars, which included all faculty, administration, and staff. Galileo's student population is composed of both high-risk and second language learners. In order to study the impact of our work, a long-range study on teacher change was implemented in August, 2008. This study began with a pre-treatment survey prior to the beginning of the school year. Data has continued to be collected following each segment of professional development. The key areas of professional development include: 1) Strategic Planning: Targets the needs of administrators, teachers, and staff; 2) Differentiation: Guides teachers approaches to student learning on an individual basis with differing instructional needs; 3) Language Arts: Supports teaching literacy; 4) Coaching in the Content Areas: Supports learning new teaching methodologies; 5) Team Building / Teacher as Leader: Builds supportive relationships through mentoring, leadership and team-building; and, 6) UCCS-Galileo Professional Development School (PDS): Fall, 2009, start of premier preservice teacher training site. The management and assessment plan holds clearly defined activities and measurable outcome-based performance indicators that will enable the collection of accurate, useful, and ongoing data for periodic assessment of progress in meeting goals and objectives.</p>		

10:30 - 11:20	Crystal 3	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
22	A Framework for Supporting Teachers to Teach for Conceptual Understanding	Teruni Lamberg	University of Nevada, Reno
Purpose			
An interpretive framework for supporting shifts in teacher practices is to focus on concepts is provided. Data from a Math Science partnership professional development project is presented. The analysis is useful for professional developers to think about how to design professional development tasks that can support shifts in teachers' instructional practices so that students can learn significant mathematical ideas.			
10:30 - 11:20	Crystal 4	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
23	Comparing Impacts and Results of Varied Mathematics and Science Elementary Field Experiences	Suzanne Nesmith	Wayland Baptist University
Purpose			
Increasingly, teacher education programs have included early field experiences as an integral component of the preparation program, and research has revealed that the objectives of these experiences should parallel the objectives sought by the teacher education program. Yet, few studies have focused on answering questions about what prospective teachers are learning from field experiences and how to identify and capitalize on the learning potential of field experiences. This session will examine specific tools utilized for the purpose of gleaning information capable of addressing the following essential questions: what was learned, what was the impact, and how might the field experience be modified so as to maximize the learning potential of the experience. This study included traditional and nontraditional mathematics and science elementary field experiences, and data was analyzed both within and between the varied experiences. Research findings will assist in determining answers to questions related to the impacts and results of field experiences so as to subsequently support the creation of experiences which capitalize on both learning potential and alignment with program objectives.			
10:30 - 11:20	Crystal 5	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
24	Reloading Science Academic Language for ELL students	Molly Weinburgh	Texas Christian Univesity
Purpose			
This research focused on the acquisition of content knowledge and academic language necessary to engage in scientific Discourse as they engage in inquiry-based instruction. The researchers' intentions were to test a modified SIOP model that used reloading and repositioning language rather that uploading language. 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 3 years of teaching summer school to recent immigrant students inform the conclusions of this study.			

11:30 - 11:55	Carson 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Creating Vodcasts with Elementary Science Methods Students: the Coriolis Force	Kate Popejoy	University of North Carolina at Charlotte
25	<p align="center">Purpose</p> <p>Elementary teachers are often faced with teaching science content that they don't fully understand. Unfortunately, we as science teacher educators are unable to completely prepare these teachers for every topic they will encounter. One of the most valuable skills we can provide is that of being able to research a topic, find credible and accurate sources of information, come to an understanding of the topic, and then prepare to teach it. In this era of the internet, an incredibly huge amount of information, both accurate and not, is available. In addition, the National Science Education Standards (1996) state, the professional development of science teachers should: •address issues, events, problems, or topics significant in science and of interest to participants •introduce teachers to scientific literature, media, and technological resources that expand their science knowledge and their ability to access further knowledge. Lastly, as schools increase their available range of technology tools, it is up to us to prepare teachers to use them appropriately in science. In this project, I work with students to create video segments using standard digital cameras, and then to produce a short movie using editing software.</p>		

11:30 - 11:55	Carson 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Misconceptions in Science: The Cycle of Confusion	Mike Robinson Sarah Dyer	University of Nevada Washoe County School District, Reno
26	<p align="center">Purpose</p> <p>This study examined the extent and breadth of science misconceptions in college (N=20) and high school (N=20) students. Data for the two groups consisted of question results from interviewed subjects. The interview questions focused on known scientific knowledge-based misconceptions. The projected educational grade level of the science information ranged from elementary to high school level. Misconceptions were found to be prevalent through all selected questions in both levels of students. The paper also discusses what can be done to identify and overcome common science misconceptions. Suggestions include the following: 1. Testing to focus on open ended questions to assess student comprehension of a complex subject. 2. Teachers learning to probe students for understanding rather than just recall. 3. Teachers not basing assumptions on clarity of pre-existing information.</p>		

11:30 - 11:55	Crystal 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Long-Term Impact of Participation in a Girls Math and Technology Program	Stephanie Murphy Lynda Wiest	University of Nevada, Reno
27	<p align="center">Purpose</p> <p>The Northern Nevada Girls Math & Technology Camp conducted at the University of Nevada, Reno is a five-day residential program designed to address underrepresentation of women in mathematics-oriented fields by providing a summer intervention program for middle school girls. The camp aims to support girls in mathematics and technology at a critical juncture by improving content knowledge, attitudes, career awareness, and networking opportunities. Previous studies investigated the impact of this program on girls' attitudes and perceived abilities at camp entrance, exit, and several months later. Through individual, semi-structured interviews with girls who had participated in the program four to five years earlier, as well as their parents/caregivers, this study investigated the perceived long-term impact of the program on girls' attitudes, abilities, and future career choices in order to help identify key issues, barriers, and supports that shape and influence females' personal decisions about mathematics/technology participation. Data were analyzed using HyperResearch qualitative research software by repeatedly reviewing data and assigning participant comments to conceptual categories, which were further analyzed for broader themes related to girls' dispositions, performance, participation, and knowledge and skills. Data were analyzed as a whole, by racial/ethnic and socioeconomic subgroups, and number of years in the program.</p>		

11:30 - 11:55	Crystal 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Dynamic Visualizations: Using Video and Data for Science Investigations	John Park	North Carolina State University
28	<p align="center">Purpose</p> <p>For several years, various software packages have enabled science teachers to synchronize probeware data with videos of the event. While students drag across the resulting graph, a video of the event is shown that displays the event at the corresponding time on the graph. In this session, the latest chemistry and physics dynamic visualizations for middle and high school will be presented.</p>		

11:30 - 11:55	Crystal 3	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Identify Challenging Mathematical Problems: A Challenge in Itself	Jan Michael San Pedro Andy Norton Angie Conn	Virginia Tech
29	<p align="center">Purpose</p> <p>There are many factors that attribute to a student's learning potential. One major factor is the description of mathematical problems that are given to students. This proposal explores data collected from letter writing exercises between secondary mathematics preservice teachers (PSTs) and high school students. These problem prompts created by the preservice teachers are grouped by the level of cognitive demand and common traits were identified in each level. These results will be discussed with attendees to the session.</p>		

11:30 - 11:55	Crystal 4	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
30	Bar Graphs and Histograms: What's So Hard to Understand?	Sharon Taylor Kathleen Cage Mittag Linda Zientek	Georgia Southern University of Texas Sam Houston State
	<p align="center">Purpose</p> <p>So many of our students do not understand the differences between bar graphs and histograms. What are the underlying causes for their misconception? What are some ways to go about correcting their misconception? Participants in this session will be able to share their experiences as well as possible solutions.</p>		

11:30 - 11:55	Crystal 5	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
31	Manipulatives: A Way to Achieve Equity in Mathematics Classrooms	Lida Uribe-Flórez Vanessa Pitts-Bannister	Virginia Tech
	<p align="center">Purpose</p> <p>NCTM (2000) calls for support on mathematics learning with understanding for all students. Learning with understanding could be supported by using tools such as manipulatives (Hiebert, et al., 1997). One question that emerges from this idea is: are manipulatives useful tools for diverse students? In this session, we will present and discuss relevant literature that supports manipulative use for diverse students (different ability levels, different disabilities, ELL) and effective ways to incorporate manipulative use to support all students.</p>		

12:00 - 1:30	Carson 3 & 4	SSMA RENO 2009	
Session	Title	Presenter(s)	Affiliation

Keynote

Lunch and Keynote

Purpose



CHARLES F. COSTA

Charles (Chuck) F. Costa was born March 20, 1939. He is a no-nonsense Pisces raised in an Italian-American family in Medford, Massachusetts. His father served in the United States Navy during WWII and received a Purple Heart for wounds he received when his ship was sunk in the Pacific. Although he had dreamed of following in his father’s military footsteps, Chuck instead joined the United States Public Health Service in 1962. He graduated from the University of Michigan in 1967 with a Master’s Degree in Environmental Sciences. His first assignment with the USPHS was a program for Offsite Monitoring of the

Nevada Test Site. When the Environmental Protection Agency assumed control of that program in 1970, he continued in that department and remained there until his retirement, having achieved the rank of Captain, in 1992.

Chuck was a key player in the clean-up and containment of several important environmental incidents. In 1979, he was sent to Pennsylvania to assist with the *Three Mile Island* accident. As an expert in the field of radioactive exposure, he was instrumental in the success of the operation. In 1991, Chuck was involved in the clean-up of the Exxon Valdez disaster. He co-authored a paper for the EPA titled, *Alaska Oil Spill Bioremediation Project: Science Advisory Board Draft Report*. He was awarded a Gold Medal by the EPA for his contributions to this project.

Chuck Costa has spent nearly half a century contributing to the programs at the Nevada Test Site. When he retired from the Public Health Service in 1992, he was hired by Los Alamos National Laboratories where he has served in several capacities. Most notable of these assignments, has been as Test Director. His successful execution of the US/UK joint, subcritical test, Kracatau, with the United Kingdom was one the highlights of his career.

Now twice retired, Chuck volunteers his time at the Atomic Testing Museum. After years of dedicated service to the Nevada Test Site Historical Foundation as a volunteer and board member, he was elected President of the foundation in November of 2008. In December 2008, when the Museum’s Director departed, Chuck stepped in as Acting Director for an undetermined period, while the Foundation works out some financial issues and coordinates another nation-wide search for a replacement.

In his spare time, Chuck enjoys fly fishing, hunting and spending times with his daughters and grandchildren.

1:30 - 1:55	Carson 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Rehearsal or Reorganization: Influences of Teachers' Beliefs about Teaching and Learning on Content Literacy Strategy Use	Anne Adams Jerine Pegg	University of Idaho
32	<p style="text-align: center;">Purpose</p> <p>Many colleges of education require all secondary preservice teachers to take content literacy courses (Romine et al., 1996). However, content literacy is still rarely incorporated into secondary school classrooms (Fisher & Ivy, 2005; Ratekin, et al., 1985). O'Brien et al. (1995) suggest that limited use of content literacy strategies at the secondary level may be due to a conflict between content literacy strategies based on socioconstructivist and sociocultural theories and the primarily positivist pedagogies of secondary schools. In order to examine the relationship between beliefs about teaching and content literacy practices, the researchers interviewed, observed, and collected classroom artifacts from a total of 26 secondary mathematics and science teachers participating in a professional development project focused on content literacy. Project activities developed teachers' understandings of teaching and learning and use of reading, writing, and concept development strategies to support conceptual understanding of mathematics and science concepts. Results suggest that although all teachers incorporated new content literacy strategies into their instruction, the nature of the changes in teachers practices were influenced by their beliefs about teaching and learning.</p>		

1:30 - 1:55	Carson 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	The Effectiveness of Classroom Reponse Systems in the High School Classroom	Heather Cannon Michael Robinson	University of Nevada, Reno
33	<p style="text-align: center;">Purpose</p> <p>This research attempts to look at the effectiveness of Classroom Response Systems based on student assessment and student evaluation. The study was conducted in a high school with an enrollment of 2,281 located in the western United States. Classroom Response Systems are a form of technology in which a student clicker or response pad is used to transmit data to a receiver that is connected to the teacher computer. The Classroom Response System allows teachers to engage students in a lecture by asking them a variety of questions. Students then use the clickers to respond and the data is collected and displayed for students and teachers to see. Two chemistry teachers participated in the study; one who used the Classroom Response System (treatment) and one who did not (control). Both teachers gave the same assessments to the each of their classes. The tests acted as the dependent variable and the Classroom Response Systems acted as the independent variable. Data collected indicates that the Classroom Response System did improve the failure rates of students on the exams given. Surveys given to students also demonstrate that students believe the Classroom Response Systems are a useful tool in the classroom and help improve understanding of material being taught.</p>		

1:30 - 1:55	Crystal 1	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Using Pen-Pal Partnerships to Prepare Preservice Teachers	Angie Conn Karl Kosko Jan Michael San Pedro	Virginia Tech
	Purpose		
34	<p>The NCTM process standards (Problem Solving, Reasoning & Proof, Communication, Connections, and Representation) were identified as ways for students to learn, use, and demonstrate mathematical content knowledge. Levels of cognitive demand (Memorization, Procedures without Connections, Procedures with Connections, and Doing Mathematics) were designed to analyze and describe mathematical tasks. Before teachers can successfully design tasks which elicit multiple NCTM processes and high levels of cognitive demand, they must have a deep understanding of these concepts. This session will describe a pen-pal project in which preservice teachers (PSTs) gained understanding of the process standards and levels of cognitive demand. The PSTs posed mathematical tasks to high school students and analyzed the responses for evidence of mathematical processes and level of cognitive demand displayed. Results show that PSTs became more adept at recognizing individual process standards and level of cognitive demand throughout the course of the study.</p>		

1:30 - 1:55	Crystal 2	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Student Peer Reviews Improve Lesson Planning and Content Understanding	Diane Schmidt Susan Cooper	Florida Gulf Coast University
	Purpose		
35	<p>Recognizing students' difficulties in writing higher-order objectives and developing inquiry lessons aligned with standards, the presenters developed and implemented a peer review process to help students in mathematics and science methods courses improve their lesson planning skills. Using weekly peer review activities provided insights into how students' level of content knowledge impacted their ability to plan. More importantly, pre-service teachers recognized the need to understand the concepts relevant to the benchmarks in order to write clear learning objectives, plan lessons, and develop questions that focus on students' conceptual understanding.</p>		

1:30 - 1:55 Session	Crystal 3 Title	25 minutes Presenter(s)	SSMA RENO 2009 Affiliation
	Parent Education as a Predictor of Student Interest in Science.	Edward Harwood Monica Young Glenn Dolphin John Tillotson	Syracuse University
36	<p style="text-align: center;">Purpose</p> <p>To determine the impact of parent educational achievement on student attitudes toward science a Student Attitudes About Science Instruction questionnaire from the National Science Foundation's Science Work Experience Programs for Teachers (SWEPT) was collected from middle and high school students in three states (Iowa, North Carolina, and New York). Student factors including attitude toward science, extracurricular science related activities, classroom achievement, self-reported effort, and expectation for additional education were evaluated for correlation to parent educational achievement. Implications for parental involvement and teacher supported extracurricular activities will be discussed.</p>		

1:30 - 1:55 Session	Crystal 4 Title	25 minutes Presenter(s)	SSMA RENO 2009 Affiliation
	Middle Level Pre-Service Teachers: An Inquiry Lesson Using Balance Scales	Shirley Matteson	Texas Tech University
37	<p style="text-align: center;">Purpose</p> <p>The content knowledge of pre-service teachers has been a focus in the mathematics education community. The link between well-qualified and adequately prepared mathematics teachers and student success has been well documented (Darling-Hammond, 2000; NCATE, 2006). The teacher educator must provide a rich inquiry-learning environment in which pre-service teachers analyze and apply mathematical concepts. Learning environments that feature inquiry promote students' comprehension of new and abstract concepts and are more likely to elicit and sustain excitement over learning (Zemelman, Daniels, and Hyde, 1998). Boaler and Greeno (2000) refer to this type of learning as "connected knowing." In this study, 26 middle level pre-service teachers participated in an interactive, inquiry environment where they investigated the mathematical and scientific concept of balance. Teachers explored "balance" through a series of physical and virtual activities. The research questions that directed this project were: How do open-ended inquiry observations and explorations assist pre-service teachers in understanding and making sense of the concept of balance? How do pre-service teachers translate these physical and virtual explorations towards a more abstract understanding of equivalence within both a mathematical and scientific context?</p>		

1:30 - 1:55	Crystal 5	25 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
38	Perceived Lasting Effects of Science Professional Development	Gil Naizer	Texas A&M Commerce
		Becky Sinclair	Texas A&M Commerce
		Cynthia Ledbetter	University of Texas, Dallas
Purpose			
<p>Components of effective professional development have been well established including: hands-on experiences, outside scientific expertise, master teachers, practical application and follow-up content (e.g., Klein, 2001; Loucks-Horsley, Hewson, Love & Stiles, 1998; National Research Council, 1996; O'Brien, 1992). The National Science Education Standards advocate professional development programs that include: learning through investigation and inquiry, integration of science and teaching pedagogy, long-term varied activities, collegial learning, and teacher as reflective practitioner. This study presents results of a follow up study including over 100 participants of professional development activities over a period of seven years. Participants were surveyed about their experiences in the program & the perceived lasting benefits of participation. Results indicate that teachers who participated for multiple years were more likely to be involved in leadership activities such as completing master's degrees, grade level chair, presentation of professional development, etc. Most teachers were still using materials, strategies, & specific activities obtained in the program.</p>			

1:30 - 2:30	Registration Area	60 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Registration Area
39	Networking Poster Session	MSP Networking Poster Session	
		Purpose	
<p>Break, walk and talk with these poster presenters and learn about their Math and Science Partnership Projects. Discuss their project successes and barriers to success!</p>			

2:00 - 2:50	Carson 1	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
40	An Inquiry Based Approach to Science Projects	Bruce Boehne	Zion Lutheran School
		Purpose	
<p>This session provides a start to finish framework for teachers to incorporate long term science project research into their existing curriculum. This highly adaptable and comprehensive program can be used from middle to high school to teach students all elements of the scientific method from research question to presentation of results and conclusion using a student directed inquiry based approach.</p>			

2:00 - 2:50	Crystal 1	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Rich Tasks in Reasoning/Problem Solving in Middle & High School	William Speer	University of Nevada Las Vegas
	Purpose		
41	This session will explore a number of engaging problems drawn from a variety of strands of the mathematics curriculum that capture the curiosity and twist the reasoning of students across grades 6-12. Each scenario is designed to display the richness of a problem in its approach, analysis, parsing, and eventual solutions offered. Important elements of both disposition and motivation will be incorporated in developing strategies that do not rely on algorithmic procedures but, instead, call for creative thinking and flexible tolerance to ambiguity. A handout will be provided that will give participants the tools necessary to carry out related discussions in classrooms.		

2:00 - 2:50	Crystal 2	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	State Standards for Grade 8 Algebra: Who Has the Answer?	Don Balka	Saint Mary's College
	Purpose		
42	Algebra in grade 8 is a common discussion topic in mathematics education. What are the common characteristics of these courses across the United States? What are unique features in various states? How do state standards align with the NCTM Principles and Standards for School Mathematics?		

2:00 - 2:50	Crystal 3	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Every Graph Tells a Story - Exploring Graphical Representations in Science and Mathematics	Bonnie Hodge	Austin Peay State University
	Purpose		
43	This presentation will focus on mathematical modeling through the telling of stories. Students often learn the mechanics of graphing (labeling the axes, plotting coordinates, and using the graphing calculator) without linking the processes to problem solving and representations of real-world data. Graphical representations are powerful tools for the communication and the transmission of concepts to a wide variety of audiences. This presentation will focus on the story behind the graphs. Participants will discuss appropriate representations and notation from data presented in a variety of modes (verbal, written, video). The activities presented will be cocurricular and appropriate for students with little algebraic background. Extensions of activities will be provided for students with more extensive backgrounds.		

2:00 - 2:50	Crystal 4	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	"Affective Teaching" to Learn Science: What is the Relationship between Practice and Motivation?	Yamil Sanchez Lynn Columba	Lehigh University
44	<p align="center">Purpose</p> <p>Considering that the No Child Left Behind law now requires science assessment, a new area for educational researcher has surfaced. This presentation will share the results of a pilot study that begins to build tools and insights related to this new area of educational research. Additionally, results from the follow-up dissertation study will showcase findings on the relationship between affective teaching and motivation to learn science. The follow-up study also included a review of the constructs and the results of the confirmatory factor analysis (CFA) will be presented, demonstrating the ability to use the MLS Inventory with different groups. Both pilot and dissertation study included eleventh grade students in public high schools in the northeast region of the United States. The findings will help future studies by providing a valid and reliable tool that can be used with continuous efforts for assessing effective instruction in high school science classrooms. Findings from the studies will also serve as a source of information for the development of other similar tool(s) in the field of science and/or other content areas.</p>		
2:00 - 2:50	Crystal 5	50 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Using Learning Styles to Become Better Teachers	George Selitto Roger Isaac Blanco	Iona College
45	<p align="center">Purpose</p> <p>We all learn in different ways. Whether we are learning how to find the slope of a line, analyzing a table of values to determine a relationship, or translating a "real world" application into an equation that can be used to model that situation, we depend on individual learning styles. In this session, teachers will be provided with a hands-on activity they can use with their students to help them identify their learning style and to use their individual style to learn better and to make that learning fun. When teachers have a better sense of how their students learn, and students understand better their preferred learning styles, activities can be planned with those styles in mind. When we can help our students become active learners in our classrooms, we all benefit. This session will provide some of the tools to achieve this goal.</p>		
3:00 - 4:20	Carson 1	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Helping Elementary Students Learn Science in a High Stakes Testing System	John McBride Martha Tevis	UT Pan American
46	<p align="center">Purpose</p> <p>I. As teachers come into the session a power point will be playing that shows students engaged in meaningful learning activities. II. Introduction: Presenters will define the problem of motivating students to learn science in a high stakes testing system. III. Presenters will provide a philosophical and pedagogical foundation for motivating students and strategies to help them learn science. IV. The presenters will then engage teachers in three meaningful sample science activities that they can use with their own students. V. Summary and conclusion</p>		

3:00 - 4:20	Carson 2	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Mathematical Habits of Mind—A New Strategy for Teaching and Learning Division of Fractions	Hsing-Wen Hu Cheng-Yao Lin	University of Wisconsin Southern Illinois University
47	<p align="center">Purpose</p> <p>In many ways, the most difficult operation involving fractional numbers is the division operation. Mathematical Habits of Mind, which are the fundamental dispositions for mathematics learners, supplies another way for teachers to teach division of fractions. By using mathematical Habits of Mind, participants will become familiar with and experience the principles of constructing children’s concepts of division of fractions. Manipulatives and concise strategies that help elementary children learn division of fractions will be demonstrated.</p>		
3:00 - 4:20	Crystal 1	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	The Lensing of Preservice Teachers of Mathematics Towards Teaching Mathematics for Understanding	Cos Fi	The University of Iowa
48	<p align="center">Purpose</p> <p>The workshop will share an ongoing work to address the questions: How do teacher candidates develop identities as teachers of students in mathematics? What participatory/engagement patterns facilitate the development of productive trajectories into the practices of mathematics teaching? The frameworks of Communities of Practice (Gee, 1999); Legitimate Peripheral Participation/Engagements (Lave and Wenger, 1991; Wenger, 1998); Identity (Boaler, 2002; Gee, 1999, 2000-2001; Sfard & Prusak, 2005); Signature Pedagogies (Shulman, 2005); and research on Mathematics Teachers and Teaching will guide the discussions. A particular highlight will be the use of Lesson Study Approach (LSA) to highlight, focus, and signify the productive practices of teaching and learning of mathematics. Video and other artifacts of student engagements will be deployed as tools to engage workshop participants. A continuation of collaboration amongst workshop participants will be proposed and commenced.</p>		
3:00 - 4:20	Crystal 2	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
	Force and Motion: Rube Goldberg in Action	Gwyndolyn Graham Crittenden	University of Central Florida
49	<p align="center">Purpose</p> <p>Rube Goldberg machines take a simple task and make it complicated by using a series of simple machines and transfers of energy to complete the task. This module will allow students the opportunity to discover how energy can be transferred from one form into another, through the concept of force and motion, by constructing a device made of many simple machines to complete a task. This module may be used in the study of energy transfer in the 6th grade science curriculum and in the study of the conservation of energy in the 7th grade science curriculum. Approximately 90 minutes will be needed for the construction of the device, large group discussion and individual group assessments. Assessments will consist of a demonstration of the group device with an oral presentation of the forces involved and the transfers of the different types of energy. Students will follow-up with a written description of the forces and energy transfers.</p>		

3:00 - 4:20	Crystal 3	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
50	Using an Inquiry Continuum to Make Sense of the Extent of Inquiry	Kenneth Miller John Graves	Montana State University Billings
Purpose			
During this session, participants will do an inquiry based activity in science. After the activity, participants will use the inquiry continuum to evaluate the extent and levels of inquiry used. The session will also include a discussion of how we use the continuum to work with prospective teachers and seasoned science teachers. Participants will then have the opportunity to discuss how this inquiry continuum can be used to help teachers to understand the inquiry process.			

3:00 - 4:20	Crystal 4	80 minutes	SSMA RENO 2009
Session	Title	Presenter(s)	Affiliation
51	Evaluating Teacher Professional Development: Challenges and Opportunities	Emily Ryan Yue Li Kristen Morio Jennifer Sutton Hsin Kao	Ohio's Evaluation & Assessment Center for Mathematics & Science Education
Purpose			
Educational evaluation is fraught with interesting challenges and opportunities. Evaluation of teacher professional development initiatives, which often pursue parallel goals of increasing teacher learning and impacting student achievement, requires thoughtful planning and careful execution from evaluation design through data analyses. This workshop will discuss issues inherent in such evaluations and suggest pragmatic strategies for overcoming obstacles and delivering rigorous and reliable findings to project personnel and external funding agencies. Specifically, the workshop will address: (a) collaborating with project personnel to design an evaluation that is mindful of project goals, as well as, limitations; (b) ensuring human rights protection in education evaluations in a variety of settings; (c) developing and ensuring the reliability of instruments that measure change in content knowledge and attitudes, including those that are used by projects spanning multiple years and cohorts; and (d) relevant applications of sophisticated analyses, including Item Response Theory - Rasch Model. Participants will be introduced to a practical and purposeful approach to evaluation planning and implementation and engage in dialogue around common evaluation issues of interest to the audience.			

4:30 - 5:30	Carson 1	SSMA RENO 2009	
Session	Convention Committee Meeting		

4:30 - 5:30	Carson 2	SSMA RENO 2009	
Session	Nominations & Elections Committee Meeting		

