2014 Colorado STEM Teacher Preparation - Poster Abstracts			
Affiliation	**Authors**	**Title**	**Abstract**
University of Northern Colorado	Dr. Lori Reinsvold, Dr. Elizabeth Franklin, Dr. Teresa Higgins, Dr. Jennifer Harding-DeKam	Mathematics and Science Teaching for English Learners (MAST-EL)	The UNC MAST-EL project is a U.S. Department of Education, OELA, grant that strengthens pre-serve elementary education majors understanding in effectively teaching mathematics and science to ELLs. Partner schools include Centennial Elementary (Evans), Dos Rios Elementary (Evans), Archuleta Elementary (Denver), and Dunn Elementary (Ft. Colins). Each MAST-EL Scholar at UNC is paired with an elementary teacher for the duration of the 5-year program. The teachers and scholars build their understandings of how to effectively scaffold language and cultural through PLCs and summer institutes. The MAST-EL Scholars complete classroom observations, ESL & Literacy Practicums, and Student Teaching with the partner teachers. To date, both pre-service and practicing teachers have demonstrated growth in their math and science knowledge and how to scaffold English language in the K-5 mathematics and science classroom.
University of Northern Colorado	Karen Allnut	Rural School Districts in Colorado: A student and teacher perspective	Of the 178 school districts in Colorado, 85% of them are classified as rural (>6500 enrolled students), and 64% are classified as small rural (>1000 enrolled students). Being a student or a teacher in one of these small rural school districts has both advantages and disadvantages. As a former student and student teacher in two such rural schools, I offer some insights that could impact preparation of STEM teachers.

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University of Northern Colorado	Dr. Rob Reinsvold. Dr. Lori Reinsvold, Dr. Val Middleton	Noyce Scholarship Program of Northern Colorado	The Noyce Scholarship Program of Northern Colorado has made an impact by: 1) helping potential teachers to commit to teaching by awarding the 42 scholarships and 58 internships; 2) supporting Noyce Teachers during their induction year, thus increasing retention in the profession; 3) creating a network for STEM teachers and teacher candidates to increase support from peers; 4) increasing early educational experiences; and 5) increasing the awareness of the need for science and math teachers and establishing it as a priority for support from our dean, provost, and university president.
University of Northern Colorado & Colorado School of Mines	R. Reinsvold, G. Greivel, W. Adams, R. Falconer, C. Moroye	CO-STEM The new Collaborative STEM Teacher Preparation Program between University of Northern Colorado and Colorado School of Mines	The CO-STEM Project is a new STEM teacher preparation program being developed between the Colorado School of Mines (a strong engineering school) and the University of Northern Colorado (a strong teacher education school). This program will provide an alternative path for CSM students that may wish to consider becoming a science or mathematics teacher, instead of becoming an engineer. The current proposed program would result in a 4 year Bachelor's Degree plus one semester for licensure by integrating most of the education courses within the CSM BS degree.

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Academy High School, Thornton, CO	Alisa Grimes, Valerie Otero	The Effects of Student Input on Homework Completion and Student Performance	Research has shown that student input and autonomy are positively correlated to motivation and agency. This study investigates the effect of input on classroom norms regarding homework on homework completion rate. Two different classroom treatments were applied over the same term of an urban high school chemistry course. The first treatment involved eliciting student ideas regarding classroom structures surrounding homework that theoretically would lead to a greater homework completion rate. The second treatment (or control) involved the traditional, authoritative structures that had been in place—students ideas were not elicited about homework and therefore the teacher decided all structures and routines regarding homework. Our results suggest that structures derived with student input led to greater homework completion rates and to higher performances on the district assessment over the teacher decided homework condition. One conclusion that can be made from this study is that if students are given input into decisions about homework structures and routines it may lead to better course performance and higher homework completion rates.

2014 Colorado STEM Teacher Preparation - Poster Abstracts			
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Colorado Mesa University	Jennifer C Daniels, Teri Lefebre	Colorado Mesa University STEM Outreach	The purpose of this study and outreach is to identify what parents, teachers, and administrators know about STEM and Experiential Learning and to what extent do they feel the need for this type of education in kindergarten through eighth grade levels are. The research hypotheses is that the majority of parents will identify STEM as stem cell research instead of inquiry based science, technology, engineering, and math and that they will not understand what experiential learning is but will agree that their children should have this component as part of their education. For teachers we hypothesis that they will know what both STEM and Experiential Learning are but will consider whether or not they want to spend time on these teaching strategies due to lack of time already with their students. Principals we believe will have an understanding of both forms of strategies and will see a need for them however, they depending on funding will not see the priority for them. This poster will also include our STEM middle school camps, summer teacher experiential camp, outreach our CMU students are working on, and our future goals for partnership.
St. Vrain Valley School District	Dr. Daniel, Patty Quinones, John Steckel, Dr. Malinda Zarske	Innovation Center	Preparing high school students for the 21st century economy by providing resources and opportunities to create genuine projects with industry partners.

2014 Colorado STEM Teacher Preparation - Poster Abstracts			
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University of Colorado – Boulder	Dr. Kim Bunning, Dr. Jeff Writer, Julie Andrew	CU Teach: STEM Teacher Preparation by Community and Collaboration /	CU Teach (a replication of the UTeach model for STEM Teacher preparation) focuses on recruiting high quality engineering, math, and science majors to receive their secondary teaching license. Collaboration with faculty members in the School of Education and Arts and Sciences in identifying strong math and science candidates has been the foundation of the program. We have recently established a partnership with the College of Engineering to recruit engineering students into receiving their secondary math and science license. An important part of this new partnership has been the infusion of engineering principles into our practicum courses, as also dictated by the Next Generation Science Standards (NGSS). All of our CU Teach methods courses are aligned with NGSS and Common Core mathematical practices. The success of the CU Teach program revolves around strong partnerships between the University of Colorado and an extraordinary group of CU Teach mentor teachers providing invaluable learning opportunities for CU Teach students in surrounding school districts. New teachers frequently assert their most powerful learning moments occur during hours spent in local classrooms. Consequently, our candidates spend close to 200 hours in classrooms, observing and teaching BEFORE they student teach. CU Teach aims to recruit and cultivate outstanding math and science teachers who span the full career trajectory from pre-service to novice to veteran teacher. The CU Teach mentor teachers are provided professional development opportunities to develop their mentoring/coaching skills; especially learning how to coach novice teachers to implement inquiry-oriented teaching practices which include

2014 Colorado STEM Teacher Preparation - Poster Abstracts			
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University of Colorado - Denver	Ron Tzur, Peter Zola	Joining Forces, Amplifying Voices: Insights from Collaborative Preparation of Teachers in STEM Content and Student-Adaptive Pedagogy	To prepare STEM teachers at CU Denver's School of Education and Human Development (SEHD) we interweave content knowledge with understanding of students' conceptual development in particular STEM areas and with teaching methods that adapt to students' funds of knowledge—their understanding and experiences. Course work is thus intermingled with intensive field experiences, where teacher candidates (TCs) work in classrooms of teachers in CU Denver's Professional Development School network (>30 schools). In the panel, Mr. Peter Zola (Laredo Elementary, Aurora) and Dr. Ron Tzur (SEHD) will share insights from over 4 years of collaboration in this context. / / Our collaboration began when Peter, a starting TC, took the Mathematics for Elementary Teachers course taught by Ron. Using student-adaptive pedagogy to teach the TCs, the course deepened their conceptual understandings of place-value number systems, multiplicative structures and operations, and fractional reasoning—along with appreciation for reform-oriented teaching. It engendered new mathematical powers and affirmative dispositions in Peter and his peers, who attested to the contrary at the course start. Then, while taking two Elementary Mathematics Teaching courses in the program (with Mr. McClintock), Peter has gradually increased his time spent with classroom teachers at Laredo, an elementary school in the PDS network. During his teaching internships, Peter began shining as a math teacher and was offered a position of a 4th grade math teacher at Laredo (two years ago). Keeping in contact with Ron about his growth (and struggles), Peter volunteered to devote his time to become a lab-classroom in math through

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