Building STEAM: Q & A with Miles Groth

Miles Groth is the 6th grade teacher at Ute Pass Elementary and leads the Manitou Academy of Arts and Sciences program.

Tell us a little about your background.
This is my 10th year of teaching in elementary schools in Colorado and Connecticut. I moved to the Colorado Springs area in 2004 to attend Colorado College and graduated with degrees in Anthropology and Southwestern Studies, and later earned my M.A. in Elementary Education.

What interested you in incorporating the outdoors in the classroom?
I grew up in a small town in Northwest Connecticut, spending my summer days and afternoons exploring the woods around my house. I always learned best when I was able to get my hands dirty! These experiences and hands-on learning continued with my time at Colorado College, where we went out into the field for weeks at a time to deepen our learning in the field. As a teacher, I am always looking for new ways to connect students’ learning to the world around them.

What do students get out of the program that they would not receive in a normal classroom setting?
This program offers students a chance to dive deep into learning and learn by experiencing. As a teacher, I love not being limited by bells signifying the end of class. If a discussion or investigation needs more time or exploration, we can dig deeper as a class.

What lesson do the students seem to connect with most?
One of students’ favorite areas is a unit of study around the design of their own tiny house. We build up to this with math lessons on determining perimeter and area of various shapes. In classes co-taught with our technology teacher, we meet with a contractor and architect to learn about the design and building process before drawing our own blueprint to scale.

Next, students transfer this to a scaled three-dimensional model using professional software, and then create a budget for the materials, building costs, furnishings, and appliances. This involved project calls on students to apply their knowledge and learning from a variety of areas into a cohesive project. This year, we plan to connect to a local tiny house builder to see the construction first hand!

A Message from Chris Briggs-Hale, UPE 6th graders, Lilleigh Rizo tests water chemistry as a part of the MAAS curriculum.
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The 2012 Waldo Canyon fire resulted not only in a flood on our playground, but a deluge of new thinking about our school and how we develop a “sense of place.” Nature had called us to something larger. When we realized our school sat upon an ancient alluvial fan, the ground beckoned children (and teachers) to research and wonder.

Suddenly our montane forests, backyard stream, and local geological workshop seemed more like a classroom outside our classrooms. This realization deepened our sense of our place in Ute Pass, a canyon where people have travelled, shared stories and art, and transported information between the plains and the mountains for generations and even millennia. In these moments of realization, the Mountain Academy for Arts and Sciences for sixth graders was born.

It was clear to us that our children were deeply affected by floods and fires. After the fire, everyone became more versed in watching the weather, asking questions about water flow, and generally becoming more interested in our natural environment. It would make sense, as part of our healing process, to engage with these new interests in more positive ways, that cause them to blossom into intellectual passions.
In addition, for some highly-motivated fifth grade children, spending an additional year studying these things in a tiny, highly personalized environment just made sense.
In 2013, we met and hired Mr. Groth — a Colorado College graduate with a passion for STEAM, hands-on learning, elementary students, and unique and powerful skills for personalizing the experience for every participant. Since this time, he has, in fact, ignited this passion across our school and community.

Today, our sixth graders participate in our own jazz, rock, and classical band, plan their own overnight backpacking science and ecology trips, build 3-D printers (a highly technical and complex engineering task), and lead fourth graders up our “backyard fourteener” to study the effects of altitude on our heart rate, temperature, and air pressure. They build topographical models of our Ute Canyon, raise chicks, measure the water quality of Fountain Creek, and monitor the migration of local birds. Students also maintain our Certified Wildlife Habitat, and lead the school in a year-long study of trout by actually raising a brood of trout in their classroom.

Recently, they wrote a Jane Goodall Roots & Shoots grant to fund signs on our Green Mountain Falls trail. Last summer the Mountain Academy for Arts and Sciences took fourteen students on a week-long “Southwest Intensive” field trip to study the ecology, archaeology, and geography of the Four Corners region.

From the ashes of an old way of schooling has bloomed a uniquely 21st century hands-on experience, open to all children of the region, firmly rooted in the Manitou and regional traditions. The Mountain Academy for Arts and Sciences has transformed our tiny village into a place with a uniquely global reach. If you would like to learn more about the Mountain Academy, please feel free to join us for an open house at Ute Pass Elementary School on Wednesday, Jan. 17 from 6-7 p.m.!