walking mountains®
science center

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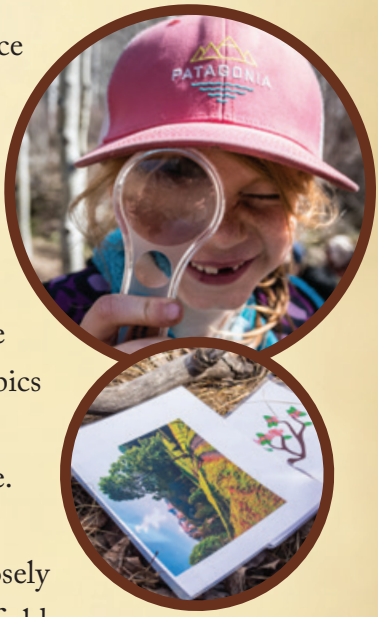
2017 Field Science Programs




Nature inspires, kids thrive...



More than a field trip, our school field science programs are outdoor learning experiences that provide students with the opportunity to practice detailed observation, work together as a team, participate in research affecting local and national land-use decisions, and gain greater connection to the natural world in which they live. Course topics can range from geology and ecosystems to biodiversity research, snow science and more.

Our Youth Programs Department works closely with the local school district to ensure that field course curriculum is aligned with Colorado Academic Standards, Next Generation Science Standards and district Units of Study in science. Our multi-disciplinary, experiential approach engages students by accommodating multiple learning styles.

Inspire environmental stewardship and sustainability through natural science education

Walking Mountains Science Center's School Field Science programs are guided by four overarching educational goals:

Increase science literacy

In programs that are aligned with district and state science standards, students will develop naturalist skills and apply scientific inquiry through explorations of the local environment. They will increase their understanding of earth sciences, life sciences, and ecological processes.

Inspire personal connection with nature

Students will appreciate that time in nature can inspire personal enjoyment and self-discovery. Through hiking, solo reflection, and exploration, Walking Mountains programs will expose students to the fun and healthy opportunities afforded by being outdoors.

Promote leadership and teamwork

Students will learn to participate as productive leaders and members of a team or community. Through group challenges, initiatives, research projects, and communal living, students will demonstrate effective and appropriate communication, equal sharing of responsibilities, and trust amongst team members.

The field day is a safe, fun, outdoor experience

Students have an opportunity to explore science topics in a hands-on, structured environment, working as a team with their field group of 8-12 students to accomplish physical and academic goals. Educators are trained teachers who work with students to teach natural science in an environment that challenges them to ask questions and think critically to find answers.

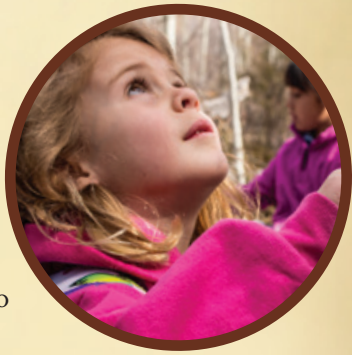
During a field day, students spend the day hiking or snowshoeing in small groups stopping along the way to participate in activities such as games and journaling that are designed to focus their attention on aspects of the natural world.

Walking Mountains Science Center operates under a special use permit from the White River National Forest and is an equal opportunity service provider. All or part of this operation is conducted on Public Lands under special permit from the U.S. Bureau of Land Management.

Kindergarten Programs

Plants: Students discover the exciting world of plants as they walk through sensory stations to explore what plants need to survive. Smell sage, hear the rustling leaves of Aspen trees, identify plant parts, and learn the important relationship between plants and animals.

Framework: Interdependent Relationships in Ecosystems: Animals, Plants, and Their Environment



Standards Addressed:

Colorado Academic Science Standards

SC.K.2.1.a: Organisms can be described and sorted by their physical characteristics.

Next Generation Science Standards

K-LS1-1: Use observations to describe patterns of what plants and animals (including humans) need to survive.

Wonders of Weather: As students become meteorologists, they will explore different components of weather! Investigate the sun's role in our changing weather through hands-on activities and investigations.

Framework: Weather and Climate

Standards Addressed:

Colorado Academic Science Standards

SC.K.3.1.a: Investigate, explain, and describe that the sun provides heat and light to earth.

Next Generation Science Standards

K-PS3-1: Make observations to determine the effect of sunlight on Earth's surface.

K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

First Grade Programs

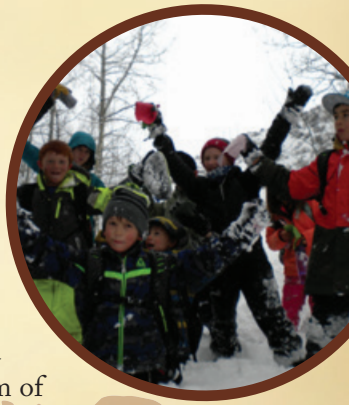
Astonishing Animals– Students will engage in hands-on exploration of animal skulls, fur, scat and tracks! Learn what makes living things unique and how their physical adaptations help them thrive and survive in their environment.

Framework: Structure, Function and Information Processing

Standards Addressed:
Colorado Academic Science Standards
SC.1.2.2: An organism is a living thing that has physical characteristics to help it survive.

Next Generation Science Standards
1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

Making Waves: Exploring Light and Sound in Nature– Students experiment with sound and light as they investigate how these waves impact the natural world. Explore how animals use sound to communicate, echoes help bats find dinner, animals adapt to life in the dark, and plants use light waves to make their own food!



Framework: Waves: Light and Sound

Standards Addressed:
Next Generation Science Standards
1-PS4-1: Plan and conduct investigations to provide evidence that vibrating materials can make sound and sound can make materials vibrate.

1-PS4-4: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

Second Grade Programs

Habitats– As students explore the variety of life that inhabits different ecosystems of the Eagle River Watershed, they will investigate and compare each component of habitat that animals and plants require to satisfy their needs.

Framework: Interdependent Relationships in Ecosystems

Standards Addressed:
Colorado Academic Science Standards
SC.2.2.1: Organisms depend on their habitat's non-living parts to satisfy their needs.

SC.2.2.2: Each plant or animal has different structures or behaviors that serve different functions.

Next Generation Science Standards
2-LS4-1: Make observations of plants and animals to compare the diversity of life in different habitats.

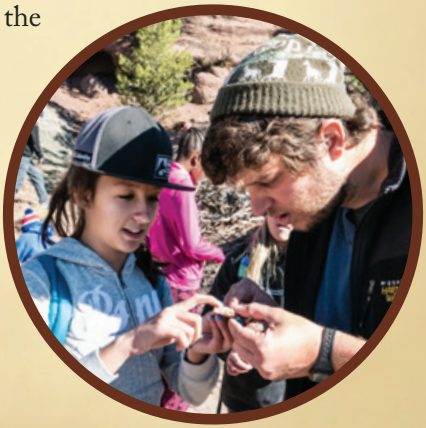
Our Water-Full World– Students transform into water droplets as they journey through the water cycle and investigate how it shapes the land and impacts the life that depends on it.

Framework: Earth's Systems: Processes that Shape the Earth

Standards Addressed:
Colorado Academic Science Standards
SC.2.3.1.a: Use evidence to develop a scientific explanation for how the weather and changing seasons impacts the organisms such as humans, plants, and other animals - and the environment

Next Generation Science Standards
2-ESS1-1: Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

2-ESS2-3: Obtain information to identify where water is found on Earth and that it can be solid or liquid.



Third Grade Programs

Changing States of Matter: Snow Science–

Students will gain an understanding of the different states of matter and learn what is required for substances to change states by investigating the formation of snow. Dig snow pits, observe snow crystals, and act like a water molecule traveling from one state of matter to the next!

Framework: Weather and Climate

Standards Addressed:

Colorado Academic Science Standards

SC.3.1.1.b: Use evidence to develop a scientific explanation around how heating and cooling affects states of matter

Next Generation Science Standards

3-ESS2-1: Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

3-ESS2-2: Obtain and combine information to describe climates in different regions of the world.

Prehistoric Life–

Students will travel back in time to the McCoy fossil beds to discover evidence of when Colorado was a shallow sea. Uncover fossils of crinoids and brachiopods and learn what these prehistoric organisms can tell us about ecosystems of the past and present.

Framework: Interdependent Relationships in Ecosystems

Standards Addressed:

Colorado Academic Science Standards

SC.4.2.2.a: Use evidence to develop a scientific explanation for:

1. what fossils tell us about prehistoric environments
2. what conclusions can be drawn from similarities between fossil evidence and living organisms

Next Generation Science Standards

3-LS4-1: Analyze and interpret data from fossils long to provide evidence of the organisms and the environments in which they lived long ago.

3-LS4-3: Construct an argument with the evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Fourth Grade Programs

Sustainable Energy – Students will discover different energy sources through experimenting with solar powered cars, circuits, and a renewable energy kit. They will engage critical thinking skills as they compare and contrast renewable and nonrenewable energy sources and learn firsthand about renewable energy through real life examples at our LEED Platinum certified Science Center.

Framework: Energy

Standards Addressed:
Colorado Academic Science Standards– Physical Science
SC.4.1.1.a: IDENTIFY and DESCRIBE the variety of energy sources.

SC.4.1.1.d: Use multiple resources - including print, electronic and human - to locate information about different sources of renewable and nonrenewable energy.

Next Generation Science Standards
4-PS3-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

4-ESS3-1: Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Geology Rocks! – Students will choose their own adventure as they walk through the rock cycle, investigate plate tectonics, discover the role of fossils in identifying previous life on earth, and get hands-on with weathering and erosion experimenting in our stream table.

Framework: Earth's Systems: Processes that Shape the Earth

Standards Addressed:
Colorado Academic Science Standards– Earth Systems Science
SC.3.3.1.b: Use evidence to develop a scientific explanation about one or more processes that break down and/or combine earth materials.

Next Generation Science Standards
4-ESS1-1: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.

4-ESS2-1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, or vegetation.

Fifth Grade Programs

Ecosystems– Students look at the relationships and energy flow within an ecosystem through the eyes of a chef as they create a recipe for a forest! Learn how living and non-living components interact and depend on one another to maintain a healthy community.

Framework: Matter and Energy in Organisms and Ecosystems

Standards Addressed:

Colorado Academic Science Standards

SC.4.2.3: There is interaction and interdependence between and among living and non-living components of ecosystems.

Next Generation Science Standards

5-PS3-1: Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Weather– Combining observation and technology, students will examine the relationships and interactions between the geosphere, hydrosphere, atmosphere, and biosphere as they take a critical look at how each of these factors impact weather.

Framework: Earth's Systems

Standards Addressed:

Colorado Academic Science Standards

SC.5.3.3: Weather conditions change because of the uneven heating of Earth's surface by the Sun's energy. Weather changes are measured by differences in temperature, air pressure, wind, and water in the atmosphere and type of precipitation.

SC.5.3.3.a: Develop and communicate an evidence-based scientific explanation for changes in weather

Next Generation Science Standards

5-ESS2-1: Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

Sixth Grade Programs

Biodiversity Research– On this two-day field research program, students participate in hands-on field practices as they discover the interactions between biotic and abiotic factors in an ecological community. Build leadership and teamwork skills while implementing the scientific method to investigate the biodiversity and health of an ecosystem.

***This program can have an emphasis on aquatic or terrestrial ecosystems. Due to spring run-off, an aquatic focus must be scheduled for the fall.*

Framework: Changing Organisms and Ecosystems: Foundations

Standards Addressed:

Colorado Academic Standards for Science

SC.6.2.1: Changes in environmental conditions can affect the survival of individual organisms, populations and entire species.

SC.6.2.1.d: Examine, evaluate, question, and ethically use information from a variety of sources and media to investigate how environmental conditions affect the survival of individual organisms.

Next Generation Science Standards

MS-LS2-3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.

Geomorphology– On this two-day field program students investigate the constructive and destructive natural processes that shape the Earth's landscape. Visit two different field sites and explore content such as tectonic plate interactions, chemical and physical weathering, erosion, deposition, stream dynamics, and more.

Framework: Geologic Forces and Foundations

Standards Addressed:

Colorado Academic Standards for Science

SC.6.3.1: Complex interrelationships exist between Earth's structure and natural processes that over time are both constructive and deconstructive.

SC.6.3.1.b: Gather, analyze and communicate evidence from text and other sources that explains the formation of earth's surface features.

Next Generation Science Standards

MS-ESS2-1: Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.

Seventh Grade Programs

Written in Stone– As students read rock layers and explore McCoy Fossil beds they will uncover clues and evidence of previous environments and the organisms that lived in Colorado many years ago. Investigate the major geologic events that are responsible for the changing landscape.

Framework: Geology Affects Life on Earth

Standards Addressed:

Colorado Academic Standards for Science

SC.7.2.5: Multiple lines of evidence show the evolution of organisms over geologic time.

SC.7.3.1: Major geologic events such as earthquakes, volcanic eruptions, mid-ocean ridges, and mountain formation are associated with plate boundaries and attributed to plate motions.

Next Generation Science Standards

MS-ESS2-3: Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and the seafloor structures to provide evidence of past plate motions.

Life: Coming Full Circle– Students will get down to the cellular level in order to understand how producers and consumers create and use energy. Get hands on and discover firsthand how that energy is transferred through an ecosystem.

Framework: Photosynthesis and Cellular Respiration

Standards Addressed:

Colorado Academic Standards for Science

SC.7.2.4.a: Gather, analyze, and interpret data regarding the basic functions of photosynthesis and cellular respiration.

SC.7.2.4.b: Use direct and indirect evidence to describe the relationship between photosynthesis and cellular respiration within plants – and between plants and animals.

Next Generation Science Standards

MS-LS1-6: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

Climate: Snow Science–

Digging snow pits and testing snow stability, students will conduct research on the fascinating world of snow through the lens of avalanche and snow science. Learn how Colorado's climate can produce a very different snowpack and avalanche danger compared to other parts of the country and explore how a changing global climate could impact mountain snow.

Framework: Meteorology and Climatology

Standards Addressed:

Colorado Academic Standards for Science

SC.8.3.2: Earth has a variety of climates defined by average temperature, precipitation, humidity, air pressure and wind that have changed over time in a particular locations.

SC.8.3.1.a: Differentiate between basic and severe weather conditions, and develop an appropriate action plan for personal safety and safety of others.

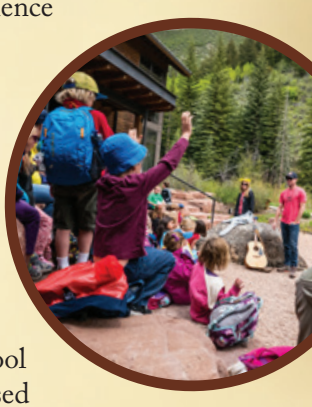
Next Generation Science Standards

MS-ESS3-2: Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

MS-PS1-2: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

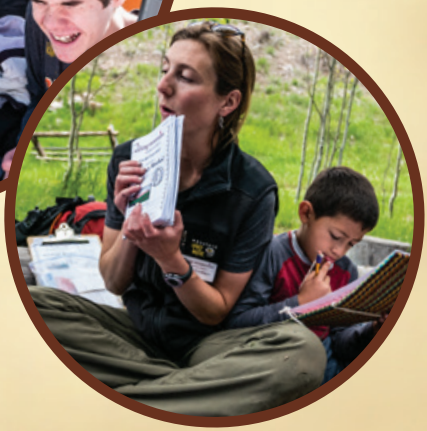
Student Assessment Program

We strive for student academic growth in each and every one of our programs. It is our goal to create assessments for every grade level that measure scientific literacy and interest in science, nature, and stewardship as a result of participating on a Walking Mountains Science Center field science program.



Currently in our 14th year of our student assessment program, we evaluated 1,446 students in 3rd-8th grades using grade and curriculum specific pre and post assessments.

Our approach to science education has consistently shown positive results in overall academic achievement for students in Eagle County. During the 2016-17 school year scientific literacy increased in all grade levels assessed an average of 23%.



Kudos from the Field

"We had a great time today. This was probably the best field trip I've been a part of. The content was awesome and the use of time was so intentional and focused. Our students were super excited and engaged during the day."
– Teacher, Red Hill Elementary School

"All students at different levels learned so much! The instructors did a wonderful job! The field experience was very valuable and enriching for all students. Safety was addressed before every activity and learning experience."
– Teacher, Homestake Peak School

"You can't get this in the classroom. The experiential learning was first class!"
–Teacher, East Middle School

"This program is very complementary to our district curriculum. It addresses specific information about Earth's materials that I find hard to integrate in such a hands-on experience."
– Teacher, Red Sandstone Elementary School

"The trip enforced what they already knew about habitats and adaptations but extended it further. This program hit our 2nd grade standards right on."
– Teacher, Eagle Valley Elementary School

"Lessons connected to what we have learned in class so it was extremely valuable. Students were engaged in activities as well as discussions with teachers and peers."
– Teacher, Homestake Peak School

"It's cool to be able to touch and feel the things we are learning about instead of just looking at pictures in a book! I love having class outside!"
–Fifth Grade Student, Vail Mountain School

"I wish we could do a program like this every week! I totally forgot we are in Avon for a while!"
–Eighth Grade Student, Eagle Valley Middle School

"I enjoyed the great views, all the fun we had and all the stuff I learned! It was really cool to learn about the different kinds of snow form!"
–Third Grade student, Edwards Elementary

Program Scheduling and Pricing

To reserve your field program date for this school year, please contact:

Sara Monson
School Programs Coordinator
saram@walkingmountains.org
970-827-9725 x138

Pricing Structure:

1- Day Field Program

Cost: $15/student**

Includes: 1 hour pre-classroom visit, 1 full field day (4-6 hours), 10:1 Student to Educator ratio, Field journal for each student

2-Day Field Program

Cost: $25/student**

Includes: 1-hour pre-classroom visit, 2 full field days (5-7 hours/day), 10:1 Student to Educator ratio, Field journal for each student

Residential Hut Trips

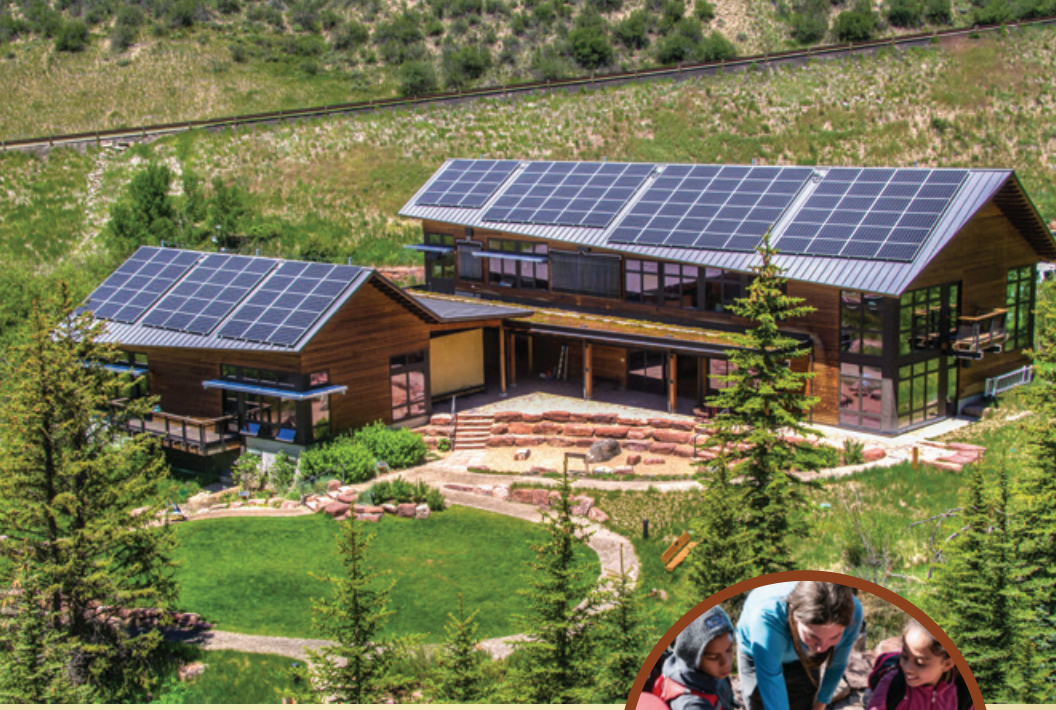
Cost: Dependent on duration and location**

Hut trips and residential experiences can be scheduled based on calendar and hut availability. Pease contact Sara Monson for more detailed information.

****Scholarships available for all field science programs.**
Please contact Sara Monson to learn more.

Program Update:

Please note that a number of our programs have undergone adaptations to align with Next Generation Science Standards and district units of study. If there is a program your students previously participated in and would like to repeat with us, please contact Sara Monson to discuss options.



Open to the Public

Explore educational opportunities at the Walking Mountains Science Center for this school year!

- Interpretive Trails
- Outdoor Classes
- Hands-on Activities
- Educational Displays
- Engaging Learning Experiences

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