



Underground Adventure

Teacher Overview of the Geo|Venture for Grades 5-8

Cave of the Winds Geo|Venture for grades 5-8 goes underground for real, applied geology that communicates earth science in a way kids just can't get in the classroom. The guide will cater and adapt the site visit to the challenge level of your group. So, whether you have an especially perceptive group of fifth graders or a right-on-track group of eighth graders, we will make our presentation meet their ability level. Our goal is to see students excited about caves and leave with a new appreciation of cave science.

The tour employs a small geology lab set up right in the cave. We use the lab to introduce specific cave geology: the science of limestone and calcium, the formation of caves and the fact that this area was once a great inland sea. We use an acid solution to demonstrate how water and rock interact to form the amazing underground world of Cave of the Winds, and we show a number of rocks, shells and fossils. We basically prep the students to be more aware and knowledgeable as we explore deeper into the caves.

During the cave tour, we'll point out excellent examples of various cave formations, including stalactites, stalagmites, flowstone, popcorn, ribbons and more. The cave sections toward the front of the cave are fairly wide and tall and easy to negotiate. As the students grow both more knowledgeable and comfortable, we take them into more challenging areas, which are dark except for the flashlights the students have with them. At one point we will have the students in total darkness so they can experience the sensory deprivation of the natural environment.

Deep into the caves, the students reach the Manitou Grand Caverns, an amazing, massive cavern. Throughout the tour, we also interject history of the area, history of the caves and their discovery and some fun cave stories. When the tour is done, the stories will leave the students with a firm impression of the appeal and dangers of caving.

This Geo|Venture can accommodate up to 60 people total. It will take up to 2 hours, including shopping time. The cave is 54 degrees Fahrenheit year-round, which will feel warm in the winter and cool in the early fall and spring. Students, teachers and chaperones might need coats.

It is imperative that teachers prepare students for a few things:

Students have to remember to bring the required flashlights. The second half of the tour is not lit, and without enough flashlights, the tour cannot take this most important segment. As teachers know all too well, middle school groups can be a challenge to manage. For the tour to proceed, we need students to be on their best behavior. This is both for the safety of other students as well as the protection of cave formations. It took centuries for many formations to form, and we are committed to keeping them "alive" and in tact so future generations can enjoy the wonders of nature. For this reason, the tour is dependent on student behavior.

TAKE A
GEO|VENTURE



CAVE OF THE WINDS

The Cave of the Winds environment is easily adapted to hit a number of benchmarks in the Colorado Model Content Standards for Science, including:

Standard 1:

Grades 3-5: Benchmark 1.

Grades 6-8: Benchmarks 1, 2, 3 and 4.

Standard 2:

Grades 3-5: Benchmarks 1, 2, 3 and 4.

Grades 6-8: Benchmarks 1, 2, 3 and 5.

Standard 3:

Grades 3-5: Benchmark 1, 2 and 6.

Grades 6-8: Benchmarks 5, 8, 11 and 12.

Standard 4:

Grades 3-5: Benchmarks 1, 2, 3, 5, 6 and 8.

Grades 6-8: Benchmarks 1, 2, 3, 4, 5, 6, 8, 9, 11 and 12.

Activities that we provide to you via Web site download, and the specific benchmarks they cover, are:

1. **Bats & Birds. Satisfies Colorado Model Content Standards for Science:**
Grades 3-5, Standard 3, Benchmark 1. Each plant or animal has different structures and behaviors that serve different functions in growth, survival, and reproduction.
2. **Are All Caves the Same? Satisfies Colorado Model Content Standards for Science:**
Grades 3-5, Standard 2, Benchmark 2. Measurable physical properties can be compared before and after effecting a change to verify a change has occurred and used to predict its outcome in similar circumstances.
3. **Create a Cave. Satisfies Colorado Model Content Standards for Science:**
Grades 3-5, Standard 4, Benchmark 2. Natural processes change Earth's surface (for example: weathering, erosion, mountain building, volcanic activity, earthquakes and floods).
4. **Don't Touch. Satisfies Colorado Model Content Standards for Science:**
Grades 3-5, Standard 1, Benchmark 1. Design, plan and conduct a variety of simple investigations (for example: formulate a testable question, state a hypothesis, make systematic observations, develop and communicate logical conclusions based on evidence).
Grades 6-8, Standard 1, Benchmark 1. Ask questions and state hypotheses that lead to different types of scientific investigations (for example: experimentation, collecting specimens, constructing models, researching scientific literature).
5. **Dissolving Limestone with Acid. Satisfies Colorado Model Content Standard for Science:**
Grades 3-5, Standard 2, Benchmark 2. Measurable physical properties can be compared before and after effecting a change has occurred and used to predict its outcome in similar circumstances.
Grades 6-8, Standard 1, Benchmark 1. Ask questions and state hypotheses that lead to different types of scientific investigations (for example: experimentation, collecting specimens, constructing models, researching scientific literature).
Grades 6-8, Standard 1, Benchmark 3. Interpret and evaluate data in order to formulate logical conclusions.

TAKE A
GEO|VENTURE



CAVE OF THE WINDS

6. **Drip, Drip, Drip. Satisfies Colorado Model Content Standard for Science:**
 - Grades 6-8, Standard 4, Benchmark 3.** Natural processes shape the Earth's surface (for example: landslides, weathering, erosion, mountain building, volcanic activity).
 - Grades 6-8, Standard 4, Benchmark 11.** The world's water is distributed and circulated through oceans, glaciers, rivers, groundwater, and atmosphere.
7. **It's a Small World. Satisfies Colorado Model Content Standard for Science:**
 - Grades 6-8, Standard 1, Benchmark 2.** Use appropriate tools, technologies and metric measurements to gather and organize data and report results.
 - Grades 6-8, Standard 3, Benchmark 8.** There is a flow of energy and matter in an ecosystem (for example: as modeled in a food chain, web, pyramid, decomposition).
8. **Not Just Your Average Decoration. Satisfies Colorado Model Content Standard for Science:**
 - Grades 6-8, Standard 4, Benchmark 8.** Atmospheric circulation is driven by solar heating (for example: the transfer of energy by radiation, convection, conduction).
 - Grades 6-8, Standard 4, Benchmark 9.** There are quantitative changes in weather conditions over time and space (for example: humidity, temperature, air pressure, cloud cover, wind, precipitation).

TAKE A
GEO|VENTURE