CaveSim Programs for Iowa Elementary Schools

Prepared by Dave Jackson, CaveSim creator and lead educator. Contact Dave: dave@cavesim.com

Teacher quotes:

“This is an incredible experience. My students absolutely enjoyed the CaveSim experience and learned so much! Thank you CaveSim!” **— Lori Hines, 3rd grade teacher, Grove Lower Elementary, Grove, OK**

“CaveSim was amazing. I had students come up to me the next day, give me a big hug and say ‘Thank you Ms. Jones for having the cave at our school. It was so fun.’ Students were able to understand cave formations, organisms and cave safety. The cave experts were fantastic. You were able to share important content related to earth science and life science. Each part of the presentation was aligned to our science standards. Thanks for all that you do. We would love to see you back next year.” **— Pat Jones, teacher, Houston Elementary, Austin,TX**

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Summary

Thank you for your interest in CaveSim! The centerpiece of our program is our mobile cave, which we bring to schools from Colorado in a 26' trailer. The cave is filled with formations, critters, and artifacts. Students get a computerized score based on how carefully they avoid stalactites and other objects as they explore. CaveSim is much more than exploring a mobile cave. We address Common-Core and NextGen Science Standards[1] with hands-on lessons. K-5 programs cover subjects including science, math, engineering, PE, and art.

Programs are led by inventor, educator, and MIT-trained engineer Dave Jackson. Dave and his wife Tracy are both real cavers, and have been doing CaveSim programs around the country for 11 years. Lessons are designed by Tracy, who has a Masters of Art in Teaching.

In addition to learning a wide range of classroom subjects, students also learn that they can do what Dave and Tracy have done: take what they've learned in school and use it to follow their passions to make the world just a little bit better. We look forward to bringing CaveSim to your school to engage your students in a whole new way.

Schools that have done and loved our programs

AL: Creative Montessori; **CO:** Peoria ES, Fulton Academy, Ryan ES, Aspen Creek K-8, Avery Parsons ES, Gold Camp ES, Academy International ES, Buena Vista ES, Cresson ES, Arrowwood ES, Legacy Academy, Falcon MS, Carson MS, Patriot ES, Aragon ES, Abrams ES, Atlas Prep, Palmer Lake ES, Ute Pass ES, Manitou Springs ES, Lake George Charter School, Ridgway ES, Las Animas ES, Queen Palmer ES, Eisenhower ES, Good Shepherd School, Cedar Ridge ES, Ben Franklin Academy, The Colorado Springs School, The University School of C.Springs, Longfellow ES, Mountain Song Community School, University Schools (MS); **GA:** Hillside Montessori, Barnwell ES, Youngs Grove ES; **KY:** Barren County Intermediate Center, Allen County MS; **MS:** Jackson Academy; **OK:** Grove Lower ES, Upper ES, and HS, Centennial ES, John Ross ES, Frontier ES, Will Rogers ES (Edmond), Stillwater Virtual Academy, Will Rogers ES (Stillwater); **TN:** Winchester Christian Academy; **TX:** Austin HS, McCallum HS, Andrews ES, Baranoff ES, Barrington ES, Blanton ES, Brentwood ES, Cowan ES, Hill ES, Houston ES, Wooldridge ES, Frost ES, Dahlstrom MS, Brawner Intermediate, Baccus ES, Lake Travis, Lakeway ES, Sanchez ES, Metz ES;

[1] www.corestandards.org/wp-content/uploads/ELA_Standards1.pdf; www.nextgenscience.org/; www.corestandards.org/wp-content/uploads/Math_Standards1.pdf

Program Components (with standards alignment)

All the components below are included in the cost of the program. Your schedule will determine how much we can cover. Students typically rotate through four different stations/lessons. Color key: NextGen Science, CommonCore ELA, CommonCore Math

CaveSim program element: Horizontal Caving	Pertinent Standards	Photos of past CaveSim programs
In the CaveSim mobile cave (contains 60' of passage with multiple levels in a 24' trailer), students explore in small groups and:		 *Thrilled to be exploring CaveSim in Glenwood Springs, CO, 2018. Photo by Chelsea Self, Post Independent.*
• Try to avoid bumping into cave formations. Students learn that oil and water do not mix, and that touching formations can cover them with skin oil, which stops the formations from growing.		
• Look for cave biota (critters, all artificial), and discuss the cave ecosystem after they exit the cave. CaveSim staff teaches about the cave food web, including the amazing lampshade spider, which eats fungus gnats, which eat fungus, which eat deceased bats, etc.	K-LS1-1 From Molecules to Organisms: Structures and Processes. … describe patterns of what plants and animals (including humans) need to survive. K-ESS3-1 Earth and Human Activity: .... represent the relationship between the needs of different plants and animals (including humans) and the places they live. 3-LS1-1 From molecules to Organisms: Structures and Processes:… describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. 3-LS4-3 Biological Evolution: Unity and Diversity Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.	
• Learn about how cave tunnels form. CaveSim staff talk about special bacteria that use enzymes to eat limestone (breaking chemical bonds to get energy).	K-ESS2-2 Earth's Systems: Construct an argument… for how plants and animals (including humans) can change the environment to meet their needs.	
• Discussion of how humans use cave-based resources (e.g., limestone, guano)	K-ESS3-3 Earth and Human Activity: Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.	 *Elementary students in Cascade, CO explore the mobile cave.*
• Staff explain aqueous speleothems. Topics: water flow is usually downhill due to gravity; sometimes water flows against gravity due to capillary action (examples: water climbing up a towel, water flow inside cave formations). Vocabulary: "capillary action."		
• Look for man-made equipment in the cave, including rescue cache and vertical caving rope ladder. Students learn that the etrier (rope ladder) is named after the French word for stirrup. Students expand vocabulary with the word "cache."		
• Look for artifacts and rock art. Discuss the importance of artifacts to native people and scientists. Learn about a CaveSim staff member's experience with artifacts in caves in Mexico. Students discuss why we don't take artifacts.		
• Art program: before entering the cave, students make cave paintings on paper. Students reflect on their art and write sentences about what story their art tells. While exploring the mobile cave, students make sketches of the cave paintings they find. After they exit the cave, students write a story about what they saw in the cave paintings. Students are invited to share the stories that they wrote.		

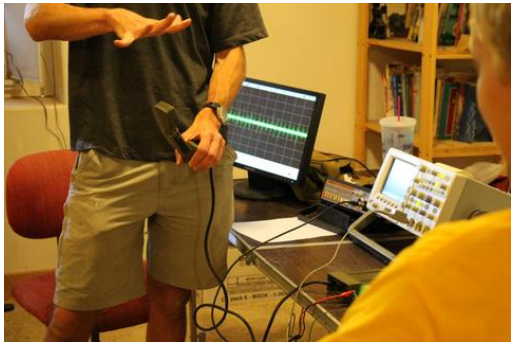
CaveSim program element: Vertical Caving	Pertinent Standards	Photos of past CaveSim programs
On CaveSim portable 12' A-frame w/ crash pads:		
• While wearing helmets, students use a Bosun's chair, ropes, and pulleys to learn about mechanical advantage afforded by 1:1 and 5:1 pulley systems, and learn that work is unchanged when a mechanical advantage is introduced. Students work together to lift a fellow student up the tower using the different systems. Students use their understanding of fractions to determine that the 5:1 pulley system reduces the required lifting force by a factor of 5. Forces, including the gravitational force, are discussed.	K-PS2-1 Motion and Stability: Forces and Interactions ... compare the effects of different strengths or different directions of pushes and pulls on the motion of an object. 3-PS2-1 Motion and Stability: Forces and Interactions:... provide evidence of the effects of balanced and unbalanced forces on the motion of an object. 3-PS2-2 Motion and Stability: Forces and Interactions:... provide evidence that a pattern can be used to predict future motion. K.CC: Count to tell the number of objects. K.MD: Describe and compare measurable attributes 1.MD.2: Express the length of an object as a whole number of length units 3.OA: Represent and solve problems involving multiplication and division.	 *Above, a student in Colorado uses mechanical advantage to lift herself up the A-frame.* *Below, students and staff in Montana work together to lift a fellow student .*
• CaveSim staff use harnesses and mechanical ascenders to ascend the A-frame. CaveSim staff discuss the ascender mechanics, as well as equipment safety and the important differences between caving and rock climbing equipment. Students learn the words "ascend," "descend," "vertical", and "horizontal." Students learn about current events in vertical caving, including ongoing efforts in Mexico to find the world's deepest cave. Students learn that some of the cavers who help with CaveSim have been over 6000' underground.	4-PS3-1 Energy:... construct an explanation relating the speed of an object to the energy of that object. 5-PS2-1 Motion and Stability: Forces and Interactions Support an argument that the gravitational force exerted by Earth on objects is directed down.	
• With the help of students, CaveSim staff demonstrate the power of friction to rapidly destroy Nylon rope. Before the demonstration, students are encouraged to develop hypotheses about what will happen when two ropes are rubbed together, and then develop hypotheses about which rope will break first. After the two ropes are rubbed together rapidly and the larger rope breaks, students are encouraged to try to figure out why the larger rope broke. CaveSim staff explain the outcome by introducing the concept of "concentrated" (because of the way the experiment is done, the heat is *concentrated* in just one spot on the larger rope, and spread out on the smaller rope, hence the melting of the larger rope). • With the help of students, CaveSim staff demonstrate the power of friction to allow a person to ascend a rope using the Prusik knot. Depending on available time, students learn to tie the Prusik, the Alpine Butterfly, the Lark's Head, and/or other knots.		
Space required: typically outdoors on flat ground. May also be placed indoors where ceiling height is >12'6". Footprint is 7' x 11'.		

CaveSim program element: Carbide Demonstrations	Pertinent Standards	Photos of past CaveSim programs
To illustrate chemistry and physics concepts, CaveSim staff bring working carbide lamps and carbide to programs. Demonstrations include:		
• CaveSim staff light a working carbide lamp by placing carbide and water in the lamp to produce a small (and safe) quantity of flammable gas. The resultant gas (acetylene) burns to produce light and heat, but the lamp body also becomes warm because of the exothermic reaction between the carbide and water. Students can touch the lamp body to get a better understanding of the concept of an exothermic reaction. Older students gain an understanding of the concept of reflectors by observing the behavior of the reflector on the lamps. New vocabulary explained by CaveSim staff: “exothermic,” with connection drawn to “exoskeleton.”	5-PS1-1 Matter and Its Interactions:… describe that matter is made of particles too small to be seen.	 *Above, carbide lamp demonstration by CaveSim staff at a program in Colorado.*
• CaveSim staff place carbide and ice in an open pan. As the ice melts, the water reacts with the carbide, producing the aforementioned acetylene gas. CaveSim staff discuss states of matter (solid ice turns to liquid water as it’s heated by the carbide, and then to vapor as it boils). For older students, the concept of limiting reactants is introduced. By watching the exciting reaction occur, students gain a more intuitive understanding of the concept of a chemical reaction. New vocabulary taught by CaveSim staff: “reaction”, “reactant.”	2-PS1-4 Matter and Its Interactions: Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. 5-PS1-4 Matter and Its Interactions Conduct an investigation to determine whether the mixing of two or more substances results in new substances.	
• CaveSim staff demonstrate conservation of mass (matter) using carbide, water, Buchner funnel, and an electronic balance. The carbide/water reaction is allowed to occur, by the resultant acetylene gas is not allowed to escape. The mass reported by the balance remains unchanged until the gas is released through a nozzle and burned.	5-PS1-2 Matter and Its Interactions Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 4-ESS3-1 Earth and Human Activity: Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.	*Below, stock photo of the lamps we use.* 
• Science experiment safety is emphasized (e.g., firmly close containers when not in use). • Fire safety is emphasized, with an emphasis on who is allowed to make a fire (a responsible adult), what must be present (a method of extinguishing the fire), where the fire should be made (in a safe container away from other fuel sources).		

Space required: typically conducted outdoors, but cannot be done in the rain. May be done indoors in an appropriate lab setting where a small quantity of smoke may be safely produced without setting off alarms or creating hazardous conditions. The smoke produced in this activity is equivalent to the smoke produced by extinguishing about a dozen birthday candles.

CaveSim program element: Cave Rescue Phones	Pertinent Standards	Photos of past CaveSim programs
Hands-on lessons about basic circuits using a pair of wired cave rescue phones. Activities include:		
• We bring two cave rescue phones to our programs. The phones are connected by wire, which allows us to discuss basic circuits, and demonstrate that a circuit requires at least one complete loop to function. Students can disconnect and reconnect wires for hands-on learning about conductors and insulators. Students talk with each other over the phones. CaveSim staff discuss the relationship between wire length, electrical resistance, electrical energy dissipation in the wire, and phone volume. Electrical circuits involving the earth as one of the conductors are discussed.	3-PS2-3 Motion and Stability: Forces and Interactions:… determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.	
• Upon request: Hands-on activities with electromagnets, permanent magnets, analog meters, and other equipment to allow students to learn about electromagnetic forces.	3-PS2-4 Motion and Stability: Forces and Interactions Define a simple design problem that can be solved by applying scientific ideas about magnets.	
• Available upon request: Demonstrations with an oscilloscope (see https://whatis.techtarget.com/definition/oscilloscope) by CaveSim owner Dave Jackson, who has designed high speed computer chips for oscilloscopes. The oscilloscope produces a graphical representation of voltage on the cave rescue phone wire vs. time, which allows students to visualize their vocal energy on a screen. We discuss graph axes, and the relationship between time-based and frequency based graphs. Resonances/oscillation of electrical and sound signals are also discussed using demos with waterproof speakers in water.	1-PS4-1 Waves and Their Applications in Technologies for Information Transfer: provide evidence that vibrating materials can make sound and that sound can make materials vibrate. 4-PS3-2 Energy:… provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. 4-PS4-1 Waves and Their Applications in Technologies for Information Transfer Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.	
Space required: typically outdoors for convenience, but can also be done in any classroom or indoor setting. Oscilloscope demo must be done indoors if raining. The oscilloscope has a VGA output, which can be projected to a smartboard, projector, or computer monitor for better viewing by students.		

Two friends enjoy talking on the cave rescue phones during a 2013 CaveSim program in Colorado.



A CaveSim staff person teaches students about electricity and magnetism using cave rescue telephones and electronic test equipment (oscilloscopes).

CaveSim program element: Bat games and lessons	Pertinent Standards	Photos of past CaveSim programs
Bat skeleton and guano demonstrations and lessons: • Discussion of similarities and differences between bat wing structure and human hands. Discussion of evolutionary pressures that may have created the similarities and differences. • Discussion of bat tail structure and usage of the tail in steering, balance, and in catching insects. • Discussion of different types/sizes of bats, and the role that they play in helping humans. Real-life lesson about bat eradication by farmers and the impact on their crops. • Photographic and/or video demonstration of the ongoing White Nose Syndrome (WNS) epidemic that has killed nearly 6 million bats in the last ~10 years. For older grades, lesson about the WNS fungus (Pseudogymnoascus destrucans) and how it eats (metabolizes) bats alive. • Discussions about history and the role that caves played in the civil war (as sources of saltpeter for the production of gunpowder). • Discussion about why bats live and hunt in groups (passive information transfer) Space required: typically done by the trailer to engage students as they wait to explore. Can also be done anywhere inside.	2-LS2-2 Ecosystems: Interactions, Energy, and Dynamics Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. 3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics Construct an argument that some animals form groups that help members survive. 3-LS3-2 Heredity: Inheritance and Variation of Traits: Use evidence to support the explanation that traits can be influenced by the environment. 4-LS1-1 From Molecules to Organisms: Structures and Processes: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.	 *CaveSim program lead Dave Jackson teaches kids about bat biology in Glenwood Springs, CO. Photo by Chelsea Self, Post Independent.*
Bat echolocation game: Two at a time, students take turns roleplay a bat and a moth. The bat (blindfolded) tries to locate and tag the moth using only the "bats" voice and their hearing. The other students form a circle to contain the two students playing the bat and moth. Students learn about echolocation, and gain personal confidence. Space required: may be played indoors or outdoors. If outdoors, a safe surface must be used (to allow a blindfolded student to move in a small circle of other students without tripping on uneven ground.	1-LS1-1 From Molecules to Organisms: Structures and Processes: … 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. 4-LS1-2 From Molecules to Organisms: Structures and Processes:... describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.	 *A student roleplaying the bat in the echolocation game during a 2012 program.*
Bat Migration Challenge game: Working individually or in groups (depending on grade level), students act out the lives of bats as they encounter daily challenges and opportunities. Students learn about the ways in which humans can act to help or harm bats. Students read cards to understand how to migrate through the game. Space required: may be played indoors or outdoors.	5-LS2-1 Ecosystems: Interactions, Energy, and Dynamics Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. Reading standards for informational text: K: 10: Actively engage in group reading activities with purpose and understanding	

CaveSim program element: Geology	Pertinent Standards	Photos of past CaveSim programs
Depending on the time available in your schedule, CaveSim staff can either do group demonstrations, or students can participate in our geology lab. Demos and labs are described below: ● Demonstration of how caves form. CaveSim staff apply weak acid to limestone, which causes the limestone to effervesce (fizz). Lesson about groundwater, why it's acidic, and how it makes caves.	4-ESS1-1 Earth's Place in the Universe: Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.	 *CaveSim program lead Dave Jackson teaches kids about limestone soluablity in weak acid during a demo in Austin, TX. Photo by Austin Parks & Rec staff.*
● Discussion on the formation of sinkholes, and the benefits / dangers that they afford humans.	2-ESS2-3 Earth's Systems: Obtain information to identify where water is found on Earth and that it can be solid or liquid.	
● Six-station geology lab. Students rotate through six stations and conduct a different rock/mineral identification experiment at each station. Identification methods include tests of hardness, magnetism, and density. Also includes fossil station.	2-PS1-1 Matter and Its Interactions:... describe and classify different kinds of materials by their observable properties. 3-LS4-1 Biological Evolution: Unity and Diversity: Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.	
● Discussion of the uses that humans have for various rocks and minerals, including limestone (for concrete) and gypsum (a common cave mineral also found in drywall)		
Space required: may be taught indoors or outdoors.		

CaveSim program element: Squeezebox and Math	Pertinent Standards	Photos of past CaveSim programs
We bring an adjustable-height wooden box through which students can crawl to safely test their ability to navigate tight spaces. Students use a tape measure to quantify how tight a space they can move through. Space required: typically set up near the stretcher (see above). Any indoor or outdoor setting is fine.	3.NF: Develop understanding of fractions as numbers. 2.MD: Measure and estimate lengths in standard units. 2.MD: Relate addition and subtraction to length.	 *Students at a 2018 Austin PARD program use a tape measure to quantify their squeezebox skills.*  *A student in Colorado has fun making it through the squeezebox. Children with a wide range of ability levels can participate in our programs. The squeezebox lid easily lifts if a child is feeling uncomfortable.*

CaveSim program element: Rescue Stretcher	Pertinent Standards	Photos of past CaveSim programs
We bring a cave rescue stretcher (Sked) to our programs. Students take turns getting into the stretcher. With the direct supervision of CaveSim staff, the student in the stretcher is carried through and around obstacles by fellow students. Students learn teamwork, communication, and leadership. Space required: any indoor or outdoor setting. May be done in classrooms or even hallways.	Speaking and listening standards: Grade 2: 1: Participate in collaborative conversations with diverse partners	 *With supervision from CaveSim staff, a team of kids gets ready to lift and carry a friend in the stretcher.*

Teaching the value of education: As an inventor and educator, Dave loves motivating students to study hard, find their passion, and understand that school is critically important later in life. During each program, Dave uses his personal story (including his experience getting Bachelors and Masters degrees in electrical engineering at MIT) to illustrate how education leads to great success and adventure.

Dave Jackson giving a keynote presentation in Lake George, CO.

Labs

Standard programs (above) can be enhanced by adding our labs. Labs provide an in-depth educational experience in a specific subject, like biology or engineering. We never use kits because our goal is to teach students that engineering and science projects are accessible to them without the use of pre-prepared materials. We emphasize conservation by using post-consumer recyclable materials in our engineering labs. Labs require extra funding for materials and staff time. Contact us for pricing.

Engineering Lab: Students create circuits using LEDs, switches, batteries, and other components to create an LED light system. They get hands-on experience with soldering (with supervision from CaveSim staff), and then design and make their own caving flashlight enclosure from recyclable materials. After creating their lights, students test their work in water to see if their lights are waterproof. Students have the chance to revise their designs if needed.

Subjects covered: Electromagnetics, product design, material science, and mechanical engineering. Standards: 3-5-ETS1-1 Engineering Design: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost; 3-5-ETS1-2 Engineering Design: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem; 3-5-ETS1-3 Engineering Design: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Recommended time: 55 to 90 minutes. Recommended class size: Up to 25 students. Recommended grade levels: 5th grade and up



Above, students work on the Engineering Lab

Biota Lab: Students culture cave biota in Petri dishes, and learn that single-celled organisms can demonstrate intelligence. Students choose from multiple experiments, and discuss the factors that impact the outcome of their experiments.

Subjects covered: Experiment design, scientific method, and biology concepts.

Recommended lab time: 30 to 45 minutes, with a follow-up on a second day (with or without CaveSim staff present).

Recommended class size: Up to 30 students. Recommended grade levels: 4th grade and up.

High school students at a two-day program in Oklahoma get ready to inoculate their Petri dishes.

Karst Lab: Students get to make their own karst topography (cave landforms) using safe household materials. Students learn hydrology, geology, basic chemistry, landforms, states of matter.

Recommended lab time: 30-40 minutes.
Recommended class size: Up to 30 students.
Recommended grade levels: Spring-semester 3rd grade and up

Formation Lab: Students make their own cave formations (think stalactites) using safe household materials. Students learn hydrology, geology, basic chemistry, states of matter.

Recommended lab time: 30-40 minutes.
Recommended class size: Up to 30 students.
Recommended grade levels: 2nd grade and up

Above, 5th graders in Colorado work on the Karst Lab

Waves and Energy Lab: After watching a demo with real cave rescue phones, students make their own version using cups and string. Students conduct several experiments with their phones and record their observations. Students learn about waves, energy, and graphing.

Recommended lab time: 30-40 minutes. Recommended class size: Up to 30 students. Recommended grades: 2nd & up

Standards addressed: 1-PS4-4 Waves and Their Applications in Technologies for Information Transfer: Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. K-2-ETS1-1 Engineering Design: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. 4-PS3-4 Energy: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Pricing and FAQ

How much do programs cost? This depends on factors like travel distance, number of days, and number of students. Our price is typically $1900/day plus transportation and lodging, and our pricing typically works out to $10 to $14/student. Contact us for a quote.

Are deposits or contracts required? No. We will reserve your program date(s) once we agree on a price and you send us an email stating that you want us to visit your school at the agreed-upon price.

How are payments made? By check, made out to CaveSim LLC, as specified on the invoice that we'll email you. W9 available upon request.

Does CaveSim carry insurance? Yes. Once you commit to working with us, please let us know if you need a Certificate of Additionally Insured.

Are permission slips required? Yes. Paperless and printable versions in both English and Spanish are available: www.cavesim.com/waiver.

How much space is needed? Is power required? See www.cavesim.com/pages/site-logistics

Is this an outdoor activity? Typically yes. The cave stays inside the trailer (we don't move it into your school). Some activities can be moved inside in inclement weather (the tower can be moved indoors if you have 13+ foot ceilings in some part of your school). In light to moderate rain/snow, we put up tents to protect students and the cave.

Is the cave heated and air conditioned? Yes. Please provide access to 1 working 20A outlet in summer, and 2 outlets (15A and 20A) in winter.

How much setup and takedown time are needed? Typically 1.5 hours for setup, and 1 hour for takedown.

How many students can participate in a day? For elementary, 150-200. For MS/HS, 100-150. Educational value and number of students are inversely related. We're excited about working with you to size your groups for the best possible educational experience.

Does CaveSim do multi-day programs? Yes. We've done as many as four consecutive days at one school.

Contact us: Email jacksondmit@cavesim.com or call 914-330-7824.

Safety and special needs

Teachers/staff can explore the cave, and students with special needs (physical or otherwise) may be assisted by school staff, students, and/or CaveSim staff. While each student is different, numerous wheelchair-bound students have explored CaveSim. Some students may have more difficulty avoiding cave formations, and our only requirement is that each student understand their goal of not touching the formations (for the safety of the system and students). Students who are unable to understand the careful-caving goal may participate in our other activities. CaveSim has night-vision cameras which allow us to check on students as they explore. We also have five access points to allow us to let participants out of the trailer if needed.

We follow the BSA's Youth Protection policy, which includes no 1:1 student/adult interaction.

Challenge by choice

Most students love exploring CaveSim. Occasionally we have a student who is unsure, uncomfortable, or afraid. We encourage him/her to set a goal for themselves and see if they can attain that goal. We teach challenge by choice, and have plenty of activities for students to try.

Classroom management

We've been doing our programs since 2010, and our staff includes former classroom teachers, so we have a good handle on classroom management. Because we spent over two years creating CaveSim, we set expectations at the start of the program: we expect students to respect the equipment and everyone involved in the program. We rarely experience discipline problems, but when we do we ask students to either change their behavior or take a break from the activity until they are ready to participate properly. Our goal is to work as a team with you, so please feel free to communicate with us about any issues that you foresee.