Chapel Rock

All of our activities are developed and refined by professional outdoor educators, well-suited for middle school, and meet Next Generation Science Standards. Schools visiting 3-days, 2-nights generally participate in 6-8 activities (14 hours).

Activities at a glance →

- Energy
- **Aspen Creek Trek**
- Creek Studies
- Owl Who
- Animals Prowling
- Cycle Factory
- Space Mission
- Smokey the Bear Say…
- Shelter Building
- Geocaching
- **Team Challenge**
- Climbing Tower and Zipline

***Bold** activities are suggested for all visiting school groups

Physical Science

Energy

Standard(s): 1. MS-PS3 Energy
Disciplinary Core Ideas: PS3.A: Definitions of Matter

- Motion energy is properly called kinetic energy; it is proportional to the mass of the moving object and grows with the square of its speed. (MS-PS3-1)
- A system of objects may also contain stored (potential) energy, depending on their relative positions. (MS-PS3-2)
- Temperature is a measure of the average kinetic energy of particles of matter. The relationship between the temperature and the total energy of a system depends on the types, states, and amounts of matter present. (MS-PS3-3),(MS-PS3-4)

Activity Summary:
Students will participate in experiments and investigations involving potential and kinetic energy, and the effect of temperature on molecules. Using the chemical reaction of alka-seltzer and water, they will create film canister rockets. This fun experiment, will use water temperature as the variable, and allow students to work together to maximize the kinetic energy of the rocket.

Life Science

Aspen Creek Trek

Standard(s): 1. MS-LS2 Ecosystems: Interactions, Energy and Dynamics
Disciplinary Core Ideas: LS2.A: Interdependent Relationships in Ecosystems, LS2.B: Cycle of Matter and Energy Transfer in Ecosystems, LS2.C: Ecosystem Dynamics, Functioning, and Resilience, LS2.D: Biodiversity and Humans

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- In any ecosystem, organisms and populations with similar requirements for food, water, oxygen, or other resources may compete with each other for limited resources, access to which consequently constrains their growth and reproduction. (MS-LS2-1)

Activity Summary:
Students will venture out on a public trail that runs along the Aspen Creek. Every trek is different depending on the season, the students, and what whims of nature present themselves. However, each trek will focus on the relationships between flora and fauna in Prescott's ponderosa pine forest ecosystem. Students will also gain a sense of human dimensions of environment and sterwardship of the environment.

Creek Studies

Standard(s): 1. MS-LS2 Ecosystems: Interactions, Energy and Dynamics, 2. MS-ESS3 Earth and Human Activity
Disciplinary Core Ideas: LS2.A: Interdependent Relationships in Ecosystems, LS2.D: Biodiversity and Humans, ESS3.C: Human Impacts on Earth Systems

- Organisms, and populations of organisms, are dependent on their environmental interactions both with other living things and with nonliving factors. (MS-LS2-1)
- Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. *(secondary to MS-LS2-5)*
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

Activity Summary:
Students will explore the Aspen Creek and go through the inquiry process to answer the question: "Is this water healthy?" Through observations and the collection of macroinvertebrates, students will be able to draw a simply conclusion about the pollution levels, and oxygen levels in the creek. They will also be challenged to consider what the potential sources of pollution, the important of high water quality, and how to reduce human impact on the freshwater systems.

Owl Whooo?

Standard(s): MS-LS4: Biological Evolution: Unity and Diversity
Disciplinary Core Ideas: LS4.C: Adaptation

- Adaptation by natural selection acting over generations is one important process by which species change over time in response to changes in environmental conditions. Traits that support successful survival and reproduction in the new environment become more common; those that do not become less common. Thus, the distribution of traits in a population changes. (MS-LS4-6)

Activity Summary:
Students will study animal adapations, through the lens of owls, our beloved raptor residents of North America. Throughout the activity, students will learn about physical owl adaptions and will ultimately learn about their diet through the dissection of owl pellets. The dissection process will involve the identification of bones, the collection of diet, and a conclusion about what that particular barn owl consumed.

Animals Prowling

Standard(s): 1. MS-LS2 Ecosystems: Interactions, Energy and Dynamics, 2. MS-LS4: Biological Evolution: Unity and Diversity,
Disciplinary Core Ideas: LS2.B: Cycle o Matter and Energy Transfer in Ecosystems, LS4.C: Adaptation

- Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)
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Activity Summary:
Students will study animal adapations and the food web. In the colder months, this may involve tracking animals through the snow and sorting images from trail cams, and in the warmer months, this may involve finding animals in their natural environments, as well as tracks and scat. The animals and evidence will vary, but the guiding theme of what makes this animals suited for its environment will carry through. Students will also engage in games and activities designed to create a better sense of the food web, and each species role (producer, consumer, decomposer, etc.) Through these investigations, students will also be able to hypothesis as to what could happen without certain species or roles.

Earth and Space Science

Cycle Factory

Standard(s): 1. MS-ESS2 Earth's Systems 2. MS-LS2 Ecosystems: Interactions, Energy and Dynamics, 3. MS-ESS3 Earth and Human Activity

Disciplinary Core Ideas: ESS2.C: The Roles of Water in Earth's Surface Processes LS2.B: Cycle o Matter and Energy Transfer in Ecosystems

- Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. (MS-ESS2-4)
- Food webs are models that demonstrate how matter and energy is transferred between producers, consumers, and decomposers as the three groups interact within an ecosystem. Transfers of matter into and out of the physical environment occur at every level. Decomposers recycle nutrients from dead plant or animal matter back to the soil in terrestrial environments or to the water in aquatic environments. The atoms that make up the organisms in an ecosystem are cycled repeatedly between the living and nonliving parts of the ecosystem. (MS-LS2-3)
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

Activity Summary:
Each student group will be given a cycle to do a mini research project on, and will present it to the bigger group. The students will then join us at our "cycle factory" and jam out. Students will use hardhats, wiffle balls, chutes, pulleys, fake toilets, and imagination to build a model tree. They will walk through the water, soil and air cycles, learning key terminology. They will also discuss how pollution can entire the cycles, and what humans can do to reduce, reuse and recycle.

Space Mission

Standard(s): MS-ESS1 Earth's Place in the Universe

Disciplinary Core Ideas: ESS1.B: Earth and Solar System

- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MS-ESS1-3)

Activity Summary:
Students will travel the distance of the known solar system, making stops at each planet and learn about atmospheres, temperature, planet geography, orbits and more. This is designed to engage the students in their own solar system, while getting a sense for scale and gravity. Students will also participate in a NASA designed experiment called "Strange New Planet". In this activity they will have mock missions to other planets in search of life and other interesting questions about other worlds. This activity also provides them with the opportunity to work in teams and learn the practical methods NASA and scientists use when exploring space.

Smokey the Bear Says…

Standard(s): MS-ESS3 Earth and Human Activity

Disciplinary Core Ideas: 1. ESS3.B: Natural Hazards 2. ESS3.C: Human Impacts on Earth Systems

- Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. (MS-ESS3-2)
- Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

Activity Summary:
Students will look at the distribution, size, and season for wildfires nationally and specific to Arizona. They will be able to learn what factors control the ignition and size of fires. After learning the basics of fire safety, the students will then be able to create a campfire with their facilitator's guidance and supervision. By learning the science behind what fuels a fire and what factors make fires dangerous or negative for the environment, students will then brainstorm ways "you can prevent forest fires." Students will also learn the role of wildfire in the natural ecosystems. This activity was created in collaboration with the Prescott

Engineering, Technology, and Applications of Science

Shelter Building

Standard(s): 1. MS-ETS1 Engineering Design

Disciplinary Core Ideas: 1. ETS1.A: Defining and Delimiting Engineering Problems 2. ETS1.B: Developing Possible Solutions 3. ETS1.C: Optimizing the Design Solution

- The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1-1)
- Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3)
- Models of all kinds are important for testing solutions. (MS-ETS1-4)
- Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. (MS-ETS1-3)

Activity Summary:
Students will be introduced to shelters from all over North America and will critically think about what resources were/are available and what needs a shelter is designed to meet from different geographies and climates. After being presented with some design restraints, the students will use natural material from their immediate surroundings to build a model shelter that meets those constraints. They will also have the ability to test and modify, ideally resulting in a greater understanding of engineering and the process. Students will also be exposed to "futuristic" engineering from around the world, and be encouraged to think creatively about applications for our current human needs and limits.

Geocaching

Standard(s): This activity does not match up specifically with Disciplinary Core Ideas, however it does overlap with NGSS practices involving technology use.

Activity Summary:
Students will work in small groups to complete an onsite geocaching course. Each student will have to opportunity to use a GPS and locate small treasures. The activity culminates in the locating of a final cache using coordinates, map and compass.

Team Building

Team Challenge

Activity Summary:
Students will have to work together on and around the Challenge Course. Challenges begin small, allowing students to discover the building blocks of effective communication and planning. As their skills improve the challenges get increasingly difficult, culminating with group attempting low ropes course elements. Throughout the process students are given the opportunity to reflect on their process and refine their team skills.

Climbing Tower/Zipline

Activity Summary:
Students get first hand experience investigating the difference between comfort zones and learning zones. Together, they discuss and share effective ways to deal with fear and stress. Then put their learning to the test as they scale our 40 foot rock wall. For those people committed to stay in their learning zone can take an exciting ride down the zip line (optional). There is an additional per person cost for this activity.