

Grade Level Science Summaries

Kindergarten:

Kindergarteners are natural scientists with budding curiosities. At Shadow Valley Elementary our kindergarten students are introduced to the processes, communication, and nature of science. Using their five senses they begin to observe and describe their environment, focusing on both the living and non-living components. With the help of live animals, skulls, pelts, feathers, rocks, and other natural items, along with scientific equipment, students have the opportunity to use their five senses to the fullest.

Kindergartners are expected to not only talk about what they experience in nature, but write about it, draw it, build it, and even act it out. Helping tie their understanding of the living and non-living parts, students investigate how these parts move, setting the stage for examining the relationships within a given environment. By exploring our pond and the surrounding landscape, and seeing live animals up close, Shadow Valley Elementary kindergartners are given the freedom to develop, ask, and then answer questions about their experiences.

First Grade:

First Graders at Shadow Valley Elementary continue to learn about and participate in science. Similar to kindergarten, first grade students focus on living and non-living things while also investigating how objects move and their innate properties. Our first grade students move beyond describing their experiences and start to compare and contrast what they see, feel, smell, and hear. Our students have the opportunity to use scientific equipment such as microscopes, hand lenses, thermometers, and compasses to observe and record changes in plants, animals, and their habitats. For example, using the school's pond as an experimental station, first grade students examine life cycles of living things in real time. In addition, First Graders learn about properties of objects by testing how they respond to changes such as cooling, heating, and mixing with water. Using the data that they recorded, students can then communicate their findings to their peers and teachers both verbally and visually. Through hands-on investigations our first grade students continue to develop their natural curiosity and the skills needed to explore and make sense of their world.

Second Grade:

At the second grade level students gain a deeper level of understanding regarding the nature of science. At this level students begin to analyze and make conclusions about their observations. Second grade students continue to learn about life, earth, and physical science, but take it one step further and explore the idea of adaptation. With the help of live animals, skulls, and pelts students take what they know about how animals differ from one another, and begin asking and answering questions about why they might differ. Through observing and recording information about their class tree, second graders are able to see how weather, seasons, and plant growth are interrelated. By visiting the local Gem and Mineral Show, and taking a rock hound hike around their neighborhoods, students investigate the rock cycle. Our Second Graders also continue to learn about the patterns and appearances of objects in our night sky, such as our moon and stars. Students create their own myths and stories about the creation of constellations helping to

make a lasting connection between art and science. Lastly, our students focus their experimental efforts on the science of falling objects and how matter changes over time.

Third Grade:

As with all grades, Third Graders not only learn about how science works, but are active participants in the process. At this level students take what they know about science and focus on interactions, force and motion, and cause and effect. For example, students move beyond defining what a living and non-living thing is, and start exploring how they interact within their environment. Field experiences to our pond, and time spent digging in the soil, provide the perfect opportunity to see how these relationships function in real life. In addition, visits from live animals, such as owls and snakes, allow students to “see” adaptation up close and personal. Creativity is a crucial aspect within science which is why our Third Graders are encouraged to use their imaginations while creating their own creatures based on a given environment. Invention doesn’t stop there. Our students also design experiments focused on force and motion, objects in space, and heat and light. Through testing, analyzing, and retesting, Third Graders investigate concepts such as aerodynamics, gravity, solar energy, and photosynthesis. Exploration such as this gives our students the chance to connect what they’re learning in the classroom to timely topics surrounding the environment and sustainability including green buildings, alternative energy, space exploration, and climate change.

Fourth Grade:

Fourth Graders at Shadow Valley Elementary are immersed in the natural history of Utah. Learning about Utah’s four ecosystems provides the base for students to delve deeper into topics such as weather, natural cycles, rocks, fossils, plants, and wildlife. Field trips, to Bues Pond and the Ogden Nature Center, inform our students about Utah’s forests, mountains, deserts, and wetlands. Classroom visits by some of Utah’s best known reptiles, birds, mammals, amphibians, and insects allow students to further develop their observation and questioning skills. Since natural cycles are a large part of the fourth grade curriculum, students at Shadow Valley Elementary spend a great deal of time outside investigating environmental phenomena. For example, by observing and recording pond levels and soil texture, students learn through hands-on experiences how the water cycle functions in their own backyard. Utilizing our WeatherBug station, and other scientific equipment, Fourth Graders record daily weather observations, noting how parameters such as temperature, wind, precipitation, and dew point change and interact with one another. Having real time weather data also allows our students to make very real connections between math and science. By studying fossils and rock formation our Fourth Graders also discover how history and science work together to inform our understanding of the natural world.

Fifth Grade:

At the fifth grade level our students continue to explore the concepts of change and cause and effect. Students not only observe a resulting change, but relate causes for the change or changes that they see. Our students do this by investigating how the earth’s surface changes over time, and one of the best places to learn about the earth’s surface is on it, which is why our Fifth Graders spend time hiking in our local mountains and canyons.

While outside, they see first-hand how processes like erosion and uplift created, and continue to create, their local landscape. By building simple structures, using materials such as toothpicks, Fifth Graders are able to test their hypothesis regarding earthquakes and building designs. Students also design and carry out experiments regarding decomposition as way to understand both chemical and physical change. Since electricity and magnetism are also part of the fifth grade curriculum, our students test how batteries work, and observe the effect of electrical currents on light bulbs, giving them a foundation to link their classroom lessons with contemporary issues such as alternative energy and energy consumption. Although much of fifth grade's curriculum revolves around earth science, our students still get a dose of life science by focusing on heredity and survival. Utilizing what they already know about species adaptation and interactions, students observe live animals and plants to further develop their understanding of genetics. By understanding how traits are passed from parent to offspring Fifth Graders are better able to ask testable questions regarding individual and species wide survival. From here our students can begin to see the relationships among ideas and issues involving heredity, agriculture, disease, endangered species, and extinction

Sixth Grade:

Scale is the theme for Sixth Graders at Shadow Valley Elementary. At this level students develop testable questions, make hypothesis, design experiments, analyze results, draw conclusions, and communicate their findings. Sixth Graders do all this by exploring concepts as large as a galaxy to organisms too small to see with the naked eye. With new found knowledge about the universe, students design and build spacecrafts using materials that might otherwise be thrown away. By integrating language arts, visual arts, and science students also create travel brochures for far off places throughout the cosmos. Moving from telescopes to microscopes, Sixth Graders collect, observe, and classify soil and aquatic microorganisms. Using what they know of adaptation and heredity, students then hypothesize about the function and survival of our local microbes. As a capstone to their time at Shadow Valley Elementary, our Sixth Graders spend the entire school year on an environmentally focused research project. Students choose a small plot within the pond ecosystem to investigate. Based on their own observations they formulate a research question that is testable over the course of many months. After data collection and analysis, students enhance their communication skills by presenting their findings in verbal and written form. Space and microbes are often complex and abstract concepts to understand. However, through hands-on experiments, and student driven scientific research, Sixth Graders at Shadow Valley Elementary develop both the technical skills and the inquisitive aptitude to tackle the our most challenging environmental issues whether planetary or microscopic.