Scientific Inquiry (Nature of Science Unifying Concept A)

Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.

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K-2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
N.2.A	**Students understand that science is an active process of systematically examining the natural world.**	**N.5.A**	**Students understand that science involves asking and answering questions and comparing the answers to what scientists know about the world.**	**N.8.A**	**Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.**	**N.12.A**	**Students understand that a variety of communication methods can be used to share scientific information.**	
N.2.A.1	Students know how to make **observations** and give descriptions using words, numbers, and drawings. E/S	N.5.A.1	Students know scientific progress is made by conducting careful **investigations,** recording data, and communicating the results in an accurate method. E/S	N.8.A.1	Students know how to identify and critically evaluate information in data, tables, and graphs. E/S	N.12.A.1	Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations. E/S	**Using Data**
		N.5.A.2	Students know how to compare the results of their experiments to what scientists already know about the world. I/L					
		N.8.A.3	Students know how to draw **conclusions** from scientific **evidence**. E/S	N.8.A.2	Students know how to critically evaluate information to distinguish between fact and opinion. E/S	N.12.A.2	Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations. I/S	**Record-keeping**
		N.5.A.4	Students know graphic representations of recorded data can be used to make predictions. E/S	N.8.A.3	Students know different explanations can be given for the same evidence. E/S	N.12.A.3	Students know repeated experimentation allows for statistical analysis and unbiased conclusions. E/S	**Accuracy**
N.2.A.2	Students know tools can be used safely to gather data and extend the senses. I/L	N.5.A.5	Students know how to plan and conduct a safe and simple investigation. E/S	N.8.A.4	Students know how to design and conduct a controlled experiment. E/L	N.12.A.4	Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L	**Safe Experimentation**
				N.8.A.5	Students know how to use appropriate technology and laboratory procedures safely for observing, measuring, recording, and analyzing data. E/L			
N.2.A.3	Students know observable patterns can be used to predict future events or sort items. E/S	N.5.A.6	Students know **models** are tools for learning about the things they are meant to resemble. I/S	N.8.A.6	Students know scientific inquiry includes evaluating results of scientific investigations, experiments, observations, theoretical and mathematical models, and explanations proposed by other scientists. E/S	N.12.A.5	Students know models and modeling can be used to identify and predict cause-effect relationships. I/S	**Models**
		N.5.A.7	Students know observable patterns can be used to organize items and ideas. E/S	N.8.A.7	Students know there are multiple methods for organizing items and information. E/S	N.12.A.6	Students know organizational schema can be used to represent and describe relationships of sets. E/S	

Science, Technology, and Society (Nature of Science Unifying Concept B)

Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people's lives. While many of technology's effects on society are regarded as desirable, other effects are seen as less desirable. These concepts are shared across subject areas such as science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and, at the same time, society influences the development of technology and its impact on culture.

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Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
N.2.B	**Students understand that many people contribute to the field of science.**	**N.5.B**	**Students understand that many people, from all cultures and levels of ability, contribute to the fields of science and technology.**	**N.8.B**	**Students understand the interactions of science and society in an ever-changing world.**	**N.12.B**	**Students understand the impacts of science and technology in terms of costs and benefits to society.**	
N.2.B.1	Students know science engages men and women of all ages and backgrounds. E/S	N.5.B.1	Students know that, throughout history, people of diverse cultures have provided scientific knowledge and technologies. E/S	N.8.B.1	Students understand that consequences of technologies can cause resource depletion and environmental degradation, but technology can also increase resource availability, mitigate environmental degradation, and make new resources economical.	N.12.B.1	Students know science, technology, and society influenced one another in both positive and negative ways. E/S	**Risks and Benefits**
		N.5.B.2	Students know **technologies** impact society, both positively and negatively. E/S			N.12.B.2	Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. E/S	**Ethical Behavior**
						N.12.B.3	Students know the influence of ethics on scientific enterprise. E/S	
N.2.B.2	Students know that, in science, it is helpful to work in a team and share findings with others. E/L	N.5.B.3	Students know the benefits of working with a team and sharing findings. E/L	N.8.B.2	Students know scientific knowledge is revised through a process of incorporating new evidence gained through on-going investigation and collaborative discussion. E/S	N.12.B.4	Students know scientific knowledge builds on previous information. E/S	**Collaboration**

Atmospheric Processes and the Water Cycle (Earth and Space Science Unifying Concept A)

Earth systems have internal and external sources of energy, both of which create heat. Driven by sunlight and Earth's internal heat, a variety of cycles connect and continually circulate energy and material through the components of the earth systems.

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Grades K - 2	**Grades 3 - 5**	**Grades 6 - 8**	**Grades 9 - 12**

E.2.A	**Students understand that changes in weather often involve water changing from one state to another.**	**E.5.A**	**Students understand the water cycle's relationship to weather.**	**E.8.A**	**Students understand the relationship between the Earth's atmosphere, topography, weather and climate.**	**E.12.A**	**Students understand heat and energy transfer in and out of the atmosphere and influence weather and climate.**
E.2.A.1	Students know the Sun is a source of heat and light. E/S	E.5.A.1	Students know the Sun is the main source of energy for planet Earth. E/S	E.8.A.1	Students know seasons are caused by variations in the amounts of the Sun's energy reaching Earth's surface due to the planet's axial tilt. E/S	E.12.A.1	Students know the Sun is the major source of Earth's energy, and provides the energy driving Earth's weather and climate. E/S
E.2.A.2	Students know water on Earth can be a liquid (rain) or a solid (snow and ice), and can go back and forth from one form to the other. E/S	E.5.A.2	Students know the processes of the water cycle, including the role of the Sun. E/S	E.8.A.2	Students know how the processes involved in the water cycle affect climatic patterns. E/S		
		E.5.A.3	Students know most of Earth's surface is covered with **fresh** or salt water. W/L	E.8.A.3	Students know the properties that make water an essential component of the earth system. E/S		
		E.5.A.4	Students know the role of water in many phenomena related to weather (e.g., thunderstorms, snowstorms, flooding, drought). E/S	E.8.A.4	Students understand the composition of Earth's atmosphere, emphasizing the role of the atmosphere in Earth's weather and climate. I/S	E.12.A.2	Students know the composition of Earth's atmosphere has changed in the past and is changing today. I/S
						E.12.A.3	Students understand the role of the atmosphere in Earth's greenhouse effect. E/S
E.2.A.3	Students know weather changes from day to day and seasonally. I/S	E.5.A.5	Students know air is a substance that surrounds us, takes up space, and moves around us as wind. I/S	E.8.A.5	Students know the difference between local weather and regional climate. I/S	E.12.A.4	Students know convection and radiation play important roles in moving heat energy in the Earth system. E/S
E.2.A.4	Students know weather can be described by measurable quantities such as temperature, wind direction and speed, and precipitation. I/L			E.8.A.6	Students know topography and patterns of global and local atmospheric movement influence local weather which occurs primarily in the lower atmosphere. E/S	E.12.A.5	Students know Earth's rotation affects winds and ocean currents. I/S

Solar System and Universe (Earth and Space Science Unifying Concept B)

The universe is a dynamic system of matter and energy. The universe is extremely large and massive with its components separated by vast distances. Tools of technology will continue to aid in the investigation of the components, origins, processes and age of the universe. Earth is one part in our solar system, which is within the Milky Way galaxy. The Sun is the energy-producing star for our solar system. Most objects in our solar system are in predictable motion, resulting in phenomena such as day/night, year, phases of the moon, tides, and eclipses.

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Grades K - 2	**Grades 3 - 5**	**Grades 6 - 8**	**Grades 9 - 12**
E.2.B **Students understand there are objects in the sky, which display patterns.**	**E.5.B** **Students understand that there are many components in the solar system including Earth.**	**E.8.B** **Students understand characteristics of our solar system that is part of the Milky Way galaxy.**	**E.12.B** **Students know scientific theories of origins and evolution of the universe.**
E.2.B.1 Students know objects in the sky display patterns in how they look, where they are located, and how they move. I/S	E.5.B.1 Students know there are more stars than anyone can easily count, but they are not scattered evenly, and they are not all the same in brightness or color. W/L	E.8.B.1 Students know the universe contains many billions of galaxies, and each galaxy contains many billions of stars. W/L	E.12.B.1 Students know common characteristics of stars. I/S
		E.8.B.2 Students know the solar system includes a great variety of planetary moons, asteroids, and comets. I/S	E.12.B.2 Students know stars are powered by nuclear fusion of lighter elements into heavier elements, which results in the release of large amounts of energy. I/S
	E.5.B.2 Students know the solar system includes the Sun, planets, and moons. E/S	E.8.B.3 Students know characteristics of the planets in our solar system. I/S	E.12.B.3 Students know ways in which technology has increased understanding of the universe. I/S
		E.8.B.4 Students know Earth is part of a solar system located within the Milky Way Galaxy. E/S	
	E.5.B.3 Students know stars are like the Sun, but they are so far away that they look like points of light. W/L	E.8.B.5 Students know the Sun is many thousands of times closer to Earth than any other star, and billions of times closer than the far end of the Milky Way Galaxy. W/L	E.12.B.4 Students know the on-going processes involved in star formation and destruction. W/L
		E.8.B.6 Students know the Sun is a medium-sized star located in the Milky Way Galaxy, part of which can be seen as a glowing band of light spanning the clear night sky. W/L	E.12.B.5 Students know scientific evidence suggest that the universe is expanding. I/S

E.2.B.2	Students know the Sun **rises** every day, and the Moon can **rise** during the day and/or the night. E/S	E.5.B.4	Students know there are cyclical patterns of observable objects in the solar system. I/S	E.8.B.7	Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S		E.8.B.7: Students know regular and predictable motions of Earth around the Sun and the Moon around the Earth explain such phenomena as the day, the year, phases of the Moon, and eclipses. E/S
E.2.B.3	Students know the Sun and Moon appear to move across the sky. I/L	E.5.B.5	Students know the patterns of stars in the sky stay the same (e.g., the constellations), although they appear to move across the sky nightly, and different stars can be seen in different seasons. (14.5.2) W/S				
E.2.B.4	Students know the Moon appears to change shape over the course of a month. I/L						

Earth's Composition and Structure (Earth and Space Science Unifying Concept C)

Earth is composed of materials that move through the biogeochemical cycles. Earth's features are shaped by ongoing and dynamic processes. These processes can be constructive or destructive and occur over geologic time scales.

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Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**	
E.2.C	**Students understand that Earth materials include rocks, soils, and water.**	**E.5.C**	**Students understand that features on the Earth's surface are constantly changed by a combination of slow and rapid processes.**	**E.8.C**	**Students understand that landforms result from a combination of constructive and destructive processes.**	**E.12.C**	**Students understand evidence for processes that take place on a geologic time scale.**
E.2.C.1	Students know Earth is composed of different kinds of materials (e.g. rocks, soils, and water) E/S	E.5.C.1	Students know fossils are evidence of past life. E/S	E.8.C.1	Students know sedimentary rocks and fossils provide evidence for changing environments and the constancy of geologic processes. E/S	E.12.C.1	Students know how successive rock strata and fossils can be used to confirm the age, history, and changing life forms of the Earth, including how this evidence is affected by the folding, breaking, and uplifting of layersE/S
		E.5.C.2	Students know water, wind, and ice constantly change the Earth's land surface by eroding rock and soil in some places and depositing them in other areas. E/S	E.8.C.2	Students know rocks at Earth's surface weather, forming sediments that are buried, then compacted, heated and often recrystallized into new rock. E/S		
		E.5.C.3	Students know landforms may result from slow processes (e.g. erosion and deposition) and fast processes (e.g. volcanoes, earthquakes, landslides, flood, and human activity). E/S	E.8.C.3	Students know Earth is composed of a crust (both continental and oceanic); hot convecting mantle; and dense, a metallic core. E/S		
				E.8.C.4	Students know the very slow movement of large crustal plates result in geological events. E/S	E.12.C.2	Students understand the concept of plate tectonics including the evidence that supports it (structural, geophysical and paleontological evidence). E/S
				E.8.C.5	Students know how geologic processes account for state and regional topography. E/S	E.12.C.3	Students know elements exist in fixed amounts and move through solid earth, oceans, atmosphere and living things as part of biogeochemical cycles. E/S
E.2.C.2	Students know rocks come in many sizes and shapes, with various textures and colors E/S	E.5.C.4	Students know rock is composed of different combinations of minerals. E/S	E.8.C.6	Students know minerals have different propoerties and different distributions according to how they form. E/S		
				E.8.C.7	Students know the characteristics, abundances, and location of renewable and nonrenewable resources found in Nevada. E/S	E.12.C.4	Student know processes of obtaining, using, and recycling of renewable and non-renewable resources. E/S
E.2.C.3	Students know soils have different colors or textures depending on their composition. E/S	E.5.C.5	Students know soil varies from place to place and has both biological and mineral components. E/S	E.8.C.8	Students know soils have properties, such as color, texture, and water retention, and provide nutrients for life according to how they form. E/S	E.12.C.5	Students know soil, derived from weathered rocks and decomposed organic material, is found in layers. E/S

Weather	Sun's Energy

Formation of Universe	Components of the Universe

Celestial Motion

Earth's Composition and Resources	Plate Tectonics	Geologic Processes

Matter (Physical Science Unifying Concept A)

Matter has various states with unique properties that can be used as a basis for organization. The relationship between the properties of matter and its structure is an essential component of study in the physical sciences. The understanding of matter and its properties leads to practical applications, such as the capability to liberate elements from ore, create new drugs, manipulate the structure of genes and synthesize polymers.

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Grades K - 2	**Grades 3 - 5**	**Grades 6 - 8**	**Grades 9 - 12**	
P.2.A **Students understand that matter has observable properties.**	**P.5.A** **Students understand properties of objects and materials.**	**P.8.A** **Students understand the properties and changes of properties in matter.**	**P.12.A** **Students understand that atomic structure explains the properties and behavior of matter.**	
P.2.A.1 Students know matter can exist as solids and as liquids. E/S	P.5.A.1 Students know matter exists in different states (i.e., solid, liquid, gas) which have distinct physical properties. E/S	P.8.A.1 Students know particles are arranged differently in solids, liquids, and gases of the same substance. E/S	P.12.A.1 Students know different molecular arrangements and motions account for the different physical properties of solids, liquids, and gases. E/S	**Properties of Matter**
P.2.A.2 Students know some properties of materials can be changed by heating, freezing, mixing, cutting, or bending. E/S	P.5.A.2 Students know heating or cooling can change some common materials, such as water, from one state to another. E/S			
P.2.A.3 Students know matter can be categorized by observable properties, such as color, size, shape, and weight. E/S	P.5.A.3 Students know materials can be classified by their observable physical and chemical properties (e.g., magnetism, conductivity, density, and solubility). E/S	P.8.A.2 Students know elements can be arranged in the periodic table which shows repeating patterns that group elements with similar properties. E/S	P.12.A.2 Students know elements in the periodic table are arranged into groups and periods by repeating patterns and relationships. E/S	
P.2.A.4 Students know different objects are made of many different types of materials. E/S	P.5.A.4 Students know that, by combining two or more materials, the properties of that material can be different from the original materials. E/S	P.8.A.3 Students know methods for separating mixtures based on the properties of the components. E/S	P.12.A.3 Students know identifiable properties can be used to separate mixtures. E/S	**Mixtures and Compounds**
			P.12.A.4 Students know atoms bond with one another by transferring or sharing electrons. E/S	
			P.12.A.5 Students know chemical reactions can take place at different rates, depending on a variety of factors (i.e. temperature, concentration, surface area, and agitation). E/S	
		P.8.A.4 Students know atoms often combine to form molecules, and that compounds form when two or more different kinds of atoms chemically bond. E/S	P.12.A.6 Students know chemical reactions either release or absorb energy. E/S	
	P.5.A.5 Students know the mass of a material remains constant whether it is together, in parts, or in a different state. E/S	P.8.A.5 Students know mass is conserved in physical and chemical changes. E/S	P.12.A.7 Students know that, in chemical reactions, elements combine in predictable ratios, and the numbers of atoms of each element do not change. I/S	
	P.5.A.6 Students know materials are composed of parts that are too small to be seen without magnification. E/S	P.8.A.6 Students know matter is made up of tiny particles called atoms. E/S	P.12.A.8 Students know most elements have two or more isotopes, some of which have practical applications. I/S	**Atomic Structure**
		P.8.A.7 Students know the characteristics of electrons, protons, and neutrons. E/S	P.12.A.9 Students know the number of electrons in an atom determines whether the atom is electrically neutral or an ion. I/S	
		P.8.A.8 Students know substances containing only one kind of atom are elements which cannot be broken into smaller pieces by normal laboratory processes. E/S		

Forces and Motion (Physical Science Unifying Concept B)

The laws of motion are used to describe the effects of forces on the movement of objects.

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Grades K - 2	**Grades 3 - 5**	**Grades 6 - 8**	**Grades 9 - 12**	
P.2.B **Students understand that position and motion of objects can be described.**	**P.5.B** **Students understand that forces can change the position and motion of an object.**	**P.8.B** **Students understand that position and motion of an object result from the net effect of the different forces acting on it.**	**P.12.B** **Students understand the interactions between force and motion.**	
P.2.B.1 Students know the position and motion of an object can be changed by pushing or pulling. E/S	P.5.B.1 Students know that, when an unbalanced force is applied to an object, the object either speeds up, slows down, or goes in a different direction. E/S	P.8.B.1 Students know the effects of **balanced** and **unbalanced** forces on an object's motion. E/S	P.12.B.1 Students know laws of motion can be used to determine the effects of forces on the motion of objects. E/S	**Motion**
P.2.B.2 Students know things move in many different ways and at different speeds (e.g., straight line, zigzag, vibration, circular motion, fast/slow). E/S	P.5.B.2 Students know how the strength of a force and mass of an object influence the amount of change in an object's motion. E/S			
P.2.B.3 Students know magnets can be used to make some things move without being touched. E/S	P.5.B.3 Students know a magnetic force causes certain kinds of objects to attract and repel each other. E/S	P.8.B.2 Students know electric currents can produce magnetic forces and magnets can cause electric currents. E/S	P.12.B.2 Students know magnetic forces and electric forces can be thought of as different aspects of electromagnetic force. I/S	**Forces**
	P.5.B.4 Students know electrically charged particles can attract or repel other electrically-charged material (eg., static electricity). E/S		P.12.B.3 Students know the strength of the electric force between two objects increases with charge and decreases with distance. I/S	
P.2.B.4 Students know things fall to the ground unless something holds them up. E/S	P.5.B.5 Students know Earth's gravity pulls any object toward it without touching it. E/S	P.8.B.3 Students know every object exerts gravitational force on every other object, and the magnitude of this force depends on the mass of the objects and their distance from one another. I/S	P.12.B.4 Students know the strength of the gravitational force between two objects increases with mass and decreases rapidly with distance. I/S	

Energy (Physical Science Unifying Concept C)

The total energy of the universe is constant. All events involve the transfer of energy in one form or another. In all energy transfers, the overall effect is that the energy is spread out uniformly.

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Grades K - 2	**Grades 3 - 5**	**Grades 6 - 8**	**Grades 9 - 12**	
P.2.C **Students know heat, light, and sound can be produced.**	P.5.C **Students understand that energy exists in different forms.**	P.8.C **Students understand transfer of energy.**	P.12.C **Students understand that there are interactions between matter and energy.**	
	P.5.C.1 Students know light can be described in terms of simple properties (e.g., color, brightness, reflection). I/S	P.8.C.1 Students know visible light is a narrow band within the electromagnetic spectrum. I/S	P.12.C.1 Students know waves (I.e. sound, seismic, electromagnetic) have energy that can be transferred when the waves interact with matter. E/S	**Waves**
P.2.C.1 Students know sound is produced by vibrating objects. I/L	P.5.C.2 Students know the wave characteristics of sound. E/S	P.8.C.2 Students know vibrations (e.g., sounds, earthquakes) move at different speeds in different materials, have different wavelengths, and set up wave-like disturbances that spread away from the source uniformly. E/S		
P.2.C.2 Students know objects can be described as hot or cold relative to another object. I/L	P.5.C.3 Students know heat is often produced as a byproduct when one form of energy is converted to another form (e.g., when machines and living organisms convert stored energy to motion). E/S	P.8.C.3 Students know physical, chemical, and nuclear changes involve a transfer of energy. E/S	P.12.C.2 Students know energy forms can be converted. E/S	**Forms and Uses of Energy**
			P.12.C.3 Students know nuclear reactions convert a relatively small amount of material into a large amount of energy. I/S	
		P.8.C.4 Students know energy cannot be created or destroyed, in a chemical or physical reaction, but only changed from one form to another. E/S	P.12.C.4 Students know characteristics, applications and impacts of radioactivity. E/S	
	P.5.C.4 Students know heat can move from one object to another by conduction, and some materials conduct heat better than others. E/S	P.8.C.5 Students know heat energy flows from warmer materials or regions to cooler ones through conduction, convection, and radiation. E/S	P.12.C.5 Students know the relationship between **heat** and **temperature.** I/S	
	P.5.C.5 Students know the organization of a simple electrical circuit (i.e., battery or generator, wire, a complete loop through which the electrical current can pass). I/S	P.8.C.6 Students know electrical circuits provide a means of transferring electrical energy to produce heat, light, sound, and chemical changes. I/S	P.12.C.6 Students know electricity is transferred from generating sources for consumption and practical uses. I/S	**Electricity**

Heredity (Life Science Unifying Concept A)

Heredity is the genetic passing of a set of instructions from generation to generation. These instructions are encoded as DNA and may manifest themselves as characteristics. Some characteristics are inherited, and some result from interactions with the environment.

By the end of the grade band:		By the end of the grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		
Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
L.2.A	**Students understand that offspring resemble their parents.**	**L.5.A**	**Students understand that some characteristics are inherited and some are not.**	**L.8.A**	**Students understand the role of genetic information in the continuation of a species.**	**L.12.A**	**Students understand how genetic information is passed from one generation to another.**	
L.2.A.1	Students know animals and plants have offspring that are similar to their parents. E/S	L.5.A.1	Students know some physical characteristics and behaviors that are inherited in animals and plants. E/S	L.8.A.1	Students know heredity is the passage of genetic instructions from one generation to the next generation. E/S	L.12.A.1	Students know genetic information passed from parents to offspring is coded in the DNA molecule. E/S	**DNA**
		L.5.A.2	Students know reproduction is an essential characteristic for the continuation of every species. E/S	L.8.A.2	Students know changes in genes of eggs and sperm can cause changes in inherited characteristics. E/S	L.12.A.2	Students know DNA molecules provide instructions for assembling protein molecules. E/S	
L.2.A.2	Students know differences exist among individuals of the same kind of plant or animal. E/S	L.5.A.3	Students know that, while offspring resemble their parents and each other, they also exhibit differences in characteristics. E/S			L.12.A.3	Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions. E/S	
		L.5.A.4	Students know how to observe and describe variations among individuals within the human population.E/S	L.8.A.3	Students know organisms can be bred for specific characteristics. I/L	L.12.A.4	Students know several causes and effects of somatic versus sex cell mutations. E/S	**Predicting**
		L.5.A.5	Students know some animal behaviors are learned. E/S	L.8.A.4	Students know some characteristics of an organism are the result of a combination of interaction with the environment and genetic information. E/S	L.12.A.5	Students know how to predict patterns of inheritance. E/S	

Structure of Life (Life Science Unifying Concept B)

All living things are composed of cells. Cells range from very simple to very complex and have structures which perform functions for the organism. Cells and structures can be damaged or fail because of intrinsic failures or disease.

By the end of the grade band:		By the end of the grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		By the end of grade band, students know and are able to do everything required in earlier grades and:		
Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
L.2.B	**Students understand that living things have identifiable characteristics.**	**L.5.B**	**Students understand that living things have specialized structures that perform a variety of life functions.**	**L.8.B**	**Students understand that living things are composed of cells, which are specialized in multicellular organisms to perform a variety of life functions.**	**L.12.B**	**Students understand that all life forms, at all levels of organization, use specialized structure and similar processes to meet life's needs.**	
L.2.B.1	Students know humans and other animals use their senses to know their world. E/S	L.5.B.1	Students know plants and animals have structures that enable them to grow, reproduce, and survive. E/S	L.8.B.1	Students know all organisms are composed of cells, which are the fundamental units of life. E/S	L.12.B.1	Students know cell structures and their functions. E/S	Cells
				L.8.B.2	Students know cells grow, divide, and take in nutrients which they use to provide energy for cell functions. E/S			
				L.8.B.3	Students know some organisms are made of just one cell and that multicellular organisms can consist of thousands to millions of cells working together. E/S			
		L.5.B.2	Students know living things have predictabl life cycles. E/S	L.8.B.4	Students know cells combine to form tissues that combine to form organs and organ systems that are specialized to perform life functions. E/S	L.12.B.2	Students know the human body has a specialized anatomy and physiology composed of an hierarchical arrangement o differentiated cells. E/S	
				L.8.B.5	Students know disease can result from defects in body systems or from damage caused by infection. E/S	L.12.B.3	Students know disease disrupts the equilibrium that exists in a healthy organism E/S	Disease

Organisms and Their Environment (Life Science Unifying Concept C)

A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.

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Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
L.2.C	**Students understand that living things live in different places.**	**L.5.C**	**Students understand that there is a variety of ecosystems on Earth and organisms interact within their ecosystems.**	**L.8.C**	**Students understand how living and non-living components of ecosystems interact.**	**L.12.C**	**Students understand that ecosystems display patterns of organization, change, and stability as a result of the interactions and interdependencies among the living and non-living components of the Earth.**	
L.2.C.1	Students know plants and animals need certain resources for energy and growth. E/S	L.5.C.1	Students know the organization of simple food webs. E/S	L.8.C.1	Students know how matter and energy are transferred through food webs in an ecosystem. E/S			**Cycles**
		L.5.C.2	Students know organisms interact with each other and with the non-living parts of their ecosystem. E/S			L.12.C.1	Students know relationships of organisms and their physical environment E/S	
L.2.C.2	Students know a habitat includes food, water, shelter and space. E/S			L.8.C.2	Students know how to characterize organisms in any ecosystem by their functions. E/S			**Ecosystems**
		L.5.C.3	Students know changes to an environment can be beneficial or detrimental to different organisms. E/S	L.8.C.3	Students will evaluate how changes in environments can be beneficial or harmful. E/S	L.12.C.2	Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability. E/S	
L.2.C.3	Students know living things are found almost everywhere in the world. E/S	L.5.C.4	Students know all organisms, including humans, can cause changes in their environments. E/S	L.8.C.4	Students know inter-related factors affect the number and type of organisms an ecosystem can support. E/S	L.12.C.3	Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials. E/S	
		L.5.C.5	Students know plants and animals have adaptations allowing them to survive in specific ecosystems. E/S			L.12.C.4	Students know the unique geologic, hydrologic, climatic, and biological characteristics of Nevada's bioregions. E/S	

Diversity of Life (Life Science Unifying Concept D)

Evidence suggests that living things change over periods of time. These changes can be attributed to genetic and/or environmental influences. This process of change over time is called biological evolution. The diversity of life on Earth is classified using objective characteristics. Scientific classification uses a hierarchy of groups and subgroups based on similarities that reflect evolutionary relationships.

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Grades K - 2		**Grades 3 - 5**		**Grades 6 - 8**		**Grades 9 - 12**		
L.2.D	**Students understand that there are many kinds of living things on Earth.**	**L.5.D**	**Students understand that living things can be classified according to physical characteristics, behaviors, and habitats.**	**L.8.D**	**Students understand that life forms change over time, contributing to the variety of organisms found on the Earth.**	**L.12.D**	**Students understand biological evolution and diversity of life.**	
L.2.D.1	Students know plants and animals can be sorted by observable characteristics and behaviors. E/S	L.5.D.1	Students know animals and plants can be classified according to their observable characteristics. E/S	L.8.D.1	Students know species can be identified and classified based upon their characteristics. (8.8.6) E/S	L.12.D.1	Students know organisms can be classified based on evolutionary relationships. E/S	**Evolution**
						L.12.D.2	Students know similarity of DNA sequences gives evidence of relationships between organisms. E/S	
L.2.D.2	Students know some plants and animals are extinct. E/S	L.5.D.2	Students know fossils are evidence of past life. E/S	L.8.D.2	Students know fossils provide evidence of how life and environmental conditions have changed throughout geologic time. E/S	L.12.D.3	Students know the fossil record gives evidence for natural selection and its evolutionary consequences. E/S	**Natural Selection**
						L.12.D.4	Students know the extinction of species can be a natural process. E/S	
		L.5.D.3	Students know differences among individuals within a species give them advantages and/or disadvantages in surviving and reproducing. E/S	L.8.D.3	Students know an organism's behavior is based on both experience and on the species' evolutionary history. E/S	L.12.D.5	Students know biological evolution explains diversity of life. E/S	
						L.12.D.6	Students know the concepts of natural and artificial selection. E/S	