Science 7

PLD Type	Objective	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
Policy		The Level 1 student is below proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly below the standard for the grade-level/course, is likely able to partially access grade level content and engages with higher order thinking skills with extensive support.	The Level 2 student is approaching proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs slightly below the standard for the grade level/course, is able to access grade-level content and engages in higher order thinking skills with some independence and support.	The Level 3 student is proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs at the standard for the grade level/course, is able to access grade-level content, and engages in higher order thinking skills with some independence and minimal support.	The Level 4 student is highly proficient in applying the English language arts/literacy, mathematics, and science knowledge/skills as specified in the Utah Core State Standards. The student generally performs significantly above the standard for the grade level/course, is able to access above grade-level content, and engages in higher order thinking skills independently.
Structure of Matter					
		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
Range	I.1 Describe the structure of matter in terms of atoms and molecules.	Recognizes that atoms are too small to see and that matter can exist in different physical states.	Recognizes the difference between atoms and molecules. Explains how our knowledge of the structure of matter has developed over time.	Diagrams the particles in different states of matter. Describes the limitations of using models to represent atoms. Draws conclusions about how our knowledge of the atom has changed models over time.	Gathers, analyzes, and evaluates information from historical experiments that have contributed to our knowledge of the structure of matter and reports on their findings.
Range	I.2 Accurately measure the characteristics of matter in different states.	Recognizes that the mass of an object is related to its density. Accurately uses instruments to measure mass and volume of a substance/object.	Given the formula for density and the mass and volume of an object, calculates the density of the object. Given multiple objects of similar size and the mass of those objects, compares the relative densities of the objects.	Given samples of matter in different states, measures the mass and volume, calculates the density, and compares the relative densities of the samples. Explains how mass and volume relate to density.	Designs and conducts an experiment to measure the mass and volume of gases and calculates the density of the gases.
Range	I.3 Investigate the motion of particles.	Recognizes that particles are in constant motion and that the amount of motion is related to the temperature of the particles.	Recognizes that diffusion occurs when a substance moves from an area of high concentration to an area of low concentration.	Compares the volume of a substance at different temperatures and relates it to the particle motion. Recognizes that diffusion occurs because of particle motion. Recognizes that materials expand and contract as their temperature changes and the effect this has on solid materials.	Designs and conducts an experiment investigating the diffusion of particles. Formulates and tests a hypothesis on the relationsihp between temperature and motion. Predicts the effects of repeated expansion and contraction of solids on human-made structures.
Properties of Matter and Earth's Structure					
		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:

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Range	II.1 Examine the effects of density and particle size on the behavior of materials in mixtures.	Recognizes that particle sorting is related to particle size and density. Observes and describes the sorting of Earth materials in a mixture.	Given the fomula for density, calculates the density of Earth materials and compares them to the densities of various objects of known density.	Given a model of a streambed, road cut, or beach, indicates where different materials would generally be located based on their density and size.	Designs and conducts an experiment that provides data on the natural sorting of various Earth materials. Predicts locations where Earth materials would be sorted by natural
Range	II.2 Analyze how density affects Earth's structure.	Recognizes that Earth has layers and that these layers are organized by density.	Given a model of Earth's layers, compares the densities of Earth's atmosphere, water, crust, and interior layers.	Relates density to the relative positioning of Earth's atmosphere, water, crust, and interior.	Distinguishes between models of Earth with accurate and inaccurate attributes and create anaccurate model showing the layering of Earth's atmosphere, water, crust, and interior.
Organ, Tissue, and Cell Structure and Function					
		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:
Range	III.1 Observe and describe cellular structures and functions.	Uses provided instruments to observe various types of cells. Observes and identifieses the cell membrane and cell nucleus.	Selects and uses appropriate instruments to observe various types of cells. Describes basic features of observed cells. Observes and identifies the cytoplasm of cells. Given diagrams of plant and animal cells, compares similarities and differences. Explains that osmosis happens in cells. Identifies that plant cells produce their own food.	Observes, describes, and compares various types of cells. Observes and distinguishes the cell wall, cell membrane, nucleus, chloroplast, and cytoplasm of cells. Differentiates between plant and animal cells based on cell wall and cell membrane. Models the cell processes of diffusion and osmosis and relates them to the motion of particles. Gathers information to report on how the basic functions of organisms are carried out within cells.	Compares and contrasts various types of cells . Describe the cell wall, cell membrane, nucleus, chloroplast, and cytoplasm of cells. Explains the purpose of the differences between plant and animal cells based on cell wall and cell membrane. Plans and conducts an investigation modeling the cell processes of diffusion and osmosis. Given a passage, cites evidence and reports on how the functions of organisms are carried out within cells.

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Range	III.2 Identify and describe the function and interdependence of various organs and tissues.	Recognizes that a cell is the simplest level of organization and an organism is the most complex. Matches a particular structure to the appropriate level; limited to cells and organisms. Recognizes that a cell completes the same life processes as an organism (respiration, waste removal, etc.)	Recognizes that a cell is the simplest level of organization, an organ is more complex and an organism is the most complex. Matches a particular structure to the appropriate level; limited to cells, organs and organisms. Relates the structure of an organ to its component parts and the larger system of which it is a part; limited to circulatory and respiratory systems. Recognizes that the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.	Orders the levels of organization from simple to complex beginning with a cell and ending with an organism. Matches a particular structure to the appropriate level. Relates the structure of an organ to its component parts and the larger system of which it is a part. Describes how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.	Compares and contrasts the levels of organization from simple to complex. Matches a particular structure to the appropriate level and provides reasoning for the distinction. Relates and discusses the structure and function of an organ to its component parts and the larger system of which it is a part. Gathers, analyzes and evaluates information about how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs.
Effect of Inherited Traits on Survival					
		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:

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Range	IV.1 Compare how sexual and asexual reproduction passes genetic information from parent to offspring.	Recalls that reproduction passes genetic information from parent to offspring. Generalizes the definition of a trait. Recognizes that organisms reproduce differently. Recognizes inherited structural traits are passed from parents to offspring.	Compares how sexual and asexual reproduction passes genetic information from parent to offspring from given examples. When given a list iidentifies inherited traits. Contrasts the exchange of genetic information in sexual and asexual reproduction from provided examples. Selects examples of organisms that reproduce sexually and those that reproduce asexually from a given list. Gives examples of inherited structural traits of offspring and their parents.	Compares how sexual and asexual reproduction passes genetic information from parent to offspring. Distinguishes between inherited and acquired traits. Contrasts the exchange of genetic information in sexual and asexual reproduction. Cites examples of organisms that reproduce sexually and those that reproduce asexually. Compares inherited structural traits of offspring and their parents.	Compares and contrasts how sexual and asexual reproduction pass genetic information from parent to offspring and provides examples of each. Cites examples of inherited and acquired traits and rationalizes the categorization of each. Gathers, analyzes, and evaluates multiple examples of organisms that reproduce sexually and those that reproduce asexually. Compares and contrasts inherited structural traits of offspring and their parents.

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Range	IV.2 Relate the adaptability of organisms in an environment to their inherited traits and structures.	Recognizes simple examples of the adaptability of organisms in an environment to their inherited traits and structures. Given a list, makes simple predictions of why traits may help an organism survive. Given a list, chooses examples of traits that provide an advantage for survival in one environment. Recalls that both humans and nature can cause changes in genetic traits. Recognizes that that the structure of organs relates to an organism's ability to survive.	Recognizes that inherited traits and structures allow organisms to adapt in an environment. Identifies why certain traits such as structure of teeth, body structure or coloration are more likely to offer an advantage for survival of an organism. Cites examples of traits that provide an advantage for survival in one environment but not other environments. Recognizes examples of changes in genetic traits due to natural and manmade influences such as mimicry in insects or breeding of dairy cows to produce more milk. Relates the structure of organs to an organism's ability to survive in a specific environment.	Relates the adaptability of organisms in an environment to their inherited traits and structures. Predicts why certain traits such as structure of teeth, body structure or coloration are more likely to offer an advantage for survival of an organism. Cites examples of traits that provide an advantage for survival in one environment but not others. Cites examples of changes in genetic traits due to natural and manmade influences such as mimicry in insects, plant hybridization to develop a specific trait, or breeding of dairy cows to produce more milk. Relates the structure of organs to an organism's ability to survive in a specific environment.	Synthesizes how the adaptability of organisms in an environment relates to their inherited traits and structures. Evaluates why certain traits such as structure of teeth, body structure or coloration are more likely to offer an advantage for survival of an organism. Evaluates and analyzes examples of traits that provides for long-term survival in one environment but not other environments. Gathers and analyzes examples of changes in genetic traits due to natural and manmade influences.
Classification Systems					
		The Level 1 student:	The Level 2 student:	The Level 3 student:	The Level 4 student:

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Range	V.1 Classify based on observable properties.	Classifies very simple items based on observations. Places names of nonliving objects into simple lists based on observed similarities. Identifies living, once living, and nonliving things. Realizes that observations are needed to classify things. Recalls that things can be classified in different ways.	Classifies simple items based on observable properties. Organizes nonliving objects based on external structures such as hard or soft. Compares living, once living, and nonliving things. Summarizes the importance of observation in classification. Explains that there are many ways to classify things.	Classifies items based on observable properties. Categorizes nonliving objects based on external structures such as hard or soft. Defends the importance of observation in scientific classification. Demonstrates that there are many ways to classify things.	Classifies unfamiliar items based on observable properties. Constructs a diagram to categorize nonliving objects based on complex external structures. Devises a comparison between living, once living, and nonliving things. Defends and evaluates the importance of observation in scientific classification. Evaluates different ways to classify things.
Range	V.2 Use and develop a simple classification scheme.	Recognizes that classification schemes are used to classify things. Recognizes that there are rules for classification and gives a reason for classify things.	Uses a provided simple classification system to classify a given item based on observed structural characteristics. Identifies simple rules for classification. Given examples, relates the importance of classification systems to the development of science knowledge. Recognizes that classification is a tool made by science to understand nature.	Develops and uses a simple classification system based upon observed structural characteristics. Generalizes rules for classification. Relates the importance of classification systems to the development of science knowledge. Recognizes that classification is a tool made by scientists to describe perceived patterns in nature.	Develops and uses a classification system for a variety of items based upon observed structural characteristics. Synthesizes and applies rules for classification. Justifies the importance of classification systems to the development of science knowledge. Evaluates classification as a tool constructed by scientists to describe perceived patterns in nature.

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Range	V.3 Classify organisms using an orderly pattern based upon structure.	Classifies organisms given simplified illustrations. Identifies types of organisms that are not plants or animals given simplified illustrations. Arranges simplified illustrations of organisms according to kingdom. Uses a simplified classification key or field guide to identify an organism. Recalls that changes can occur in classification systems due to new knowledge.	Classifies organisms using a simple orderly pattern based upon structure. Identifies types of organisms that are not classified as either plant or animal given support. Arranges organisms according to kingdom given illustrations. Gives an example of changes in classification systems due to new information.	Classifies organisms using an orderly pattern based upon structure. Arranges organisms according to kingdom. Uses a classification key or field guide to identify organisms. Reports on changes in classification systems as a result of new information or technology.	Classifies multiple organisms using an orderly pattern based upon structure. Identifies unfamiliar types of organisms that are not classified as either plant or animal such as bacteria, fungi and protists. Arranges unfamiliar organisms according to kingdom. Uses a complex classification key or field guide to identify organisms. Evaluates changes in classification systems as a result of new information or technology.

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