RISE PLD Science Grade 8

	Below Proficient	Approaching Proficient	Proficient	Highly Proficient
	The Level 1 student is below proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly below the standard for the grade-level, is able to partially access grade level content, and engages with the science and engineering practices and crosscutting concepts with extensive support.	The Level 2 student is approaching proficient in applying all three dimensions as specified in the Utah SEEd standards. The student performs slightly below the standard for the grade level, is able to access grade-level content, and engages with most of the science and engineering practices and crosscutting concepts with some independence and support.	The Level 3 student is proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs at the standard for the grade level, is able to access grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.	The Level 4 student is highly proficient in applying all three dimensions as specified in the Utah SEEd standards. The student generally performs significantly above the standard for the grade level, is able to access above grade-level content, and engages with the science and engineering practices and crosscutting concepts independently.
Physical Science				
8.1	Identify the components of a model to explain the conservation of mass when two substances react; and interpret data to construct an explanation using evidence that supports that the properties of matter are a function of the composition of atoms and molecules that make up matter as well as thermal energy.	Use a model to: 1) show that the number of atoms does not change during chemical reactions, 2) show that particle motion changes when thermal energy is added to or removed from a system, 3) identify reactants and products in a chemical reaction, and 4) describe substances' scales and properties. Describe the patterns in data from investigations to determine whether a chemical reaction has occurred by means of comparing products and reactants. Communicate information about the function and structure of materials' properties and the origin of synthetic materials.	Develop and use models to: 1) show that mass is conserved during chemical reactions, 2) predict changes in particle motion when thermal energy is added to or removed, and 3) describe substances' scales and properties. Analyze and interpret patterns in data from investigations to determine whether a chemical reaction has occurred by means of comparing products and reactants. Obtain information about the function and structure of materials' properties and the origin of synthetic materials.	Evaluate and revise a model: 1) that describes how mass is conserved during chemical reactions, 2) to explain predicted changes in particle motion when thermal energy is added to or removed, and 3) to describe substances' scales and properties. Analyze and interpret patterns in data from investigations in order to predict the outcomes (products) of a chemical reaction. Evaluate information about the function and structure of materials' properties and the origin of synthetic materials.
8.1	Identify characteristics of an optimal device that can affect the rate of phase change.	Use a device that can affect the rate of phase change and then analyze competing devices based on criteria for success.	Construct a device that can affect the rate of phase change and then analyze competing devices based on criteria for success.	Construct, analyze, and revise a device that can affect the rate of phase change and then analyze, modify, and improve competing devices based on criteria for success.
8.2	Identify components of a model that investigates how kinetic and potential energy interact, transform, or transfer to another object; and collect and record data for an investigation that provides data regarding the temperature and total energy of a system and its dependency on a variety of factors, including the types and states of matter, as well as the amount of matter involved.	Use an investigation, ask questions, and use graphical displays of data to identify changes about the relationship between an object's quantities and changes in energy due to energy transfer.	Conduct an investigation, generate questions, and use graphical displays of data to construct an argument about the relationship between changes in an object's quantities and changes in energy due to energy transfer.	Plan, conduct, and evaluate an investigation; generate, interpret, and evaluate questions; and analyze graphical displays of data to construct an argument about the relationship between changes in an object's quantities and changes in energy due to energy transfer.
8.2	Identify the mathematical components in a model to describe the patterns observed between wave characteristics and wave energy; and select a claim with evidence to show that waves are reflected, absorbed, or transmitted through various materials.	Use a mathematical model to describe the relationship between wave characteristics and wave energy; and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. Communicate information about the function and structure of digital and analog signals.	Use mathematical models to describe the relationship between wave characteristics and wave energy; and develop a model to describe that waves are reflected, absorbed, or transmitted through various materials. Obtain information about the function and structure of digital and analog signals.	Use mathematical models to support the claim that there is a relationship between wave characteristics and wave energy; and evaluate and revise a model to describe that waves are reflected, absorbed, or transmitted through various materials. Evaluate information about the function and structure of digital and analog signals.
Life Science				
8.3	Organize information from an investigation to support an argument using evidence, or identify the components of a model to explain that: 1) all living things are made up of cells that work together to form more complex structures and systems, 2) both plants and animals convert energy into food sources but the processes to do so are different, and 3) characteristic animal behaviors and specialized plant structures affect the probability of reproduction.	Use data from an investigation and/or a model to support the arguments that: 1) plants use energy from light to transform matter through photosynthesis and 2) food is transformed through chemical reactions that rearrange molecules and release energy.	Analyze data from a planned and conducted investigation and/or develop a model to support the arguments that: 1) plants use energy from light to transform matter through photosynthesis and 2) food is transformed through chemical reactions that rearrange molecules and release energy.	Revise and evaluate an investigation and/or a model that uses multiple sets of data to construct arguments that: 1) plants use energy from light to transform matter through photosynthesis and 2) food is transformed through chemical reactions that rearrange molecules and release energy.
8.3	Identify components of a model to explain the dynamic relationships and interactions among the diverse types of living and nonliving parts of an ecosystem, including the flow of energy and the cycling of matter among organisms and abiotic components of an ecosystem. Organize multiple graphical displays of data to support a solution to mitigate disruptions to any part of an ecosystem by human access to natural resources.	Identify and communicate information about the dynamic relationships among the diverse types of living and nonliving parts of an ecosystem, which includes the flow of energy and the cycling of matter.	Identify questions and obtain information about the dynamic relationships among the diverse types of living and nonliving parts of an ecosystem, which includes the flow of energy and the cycling of matter.	Generate questions to analyze and evaluate information about the dynamic relationships among the diverse types of living and nonliving parts of an ecosystem which includes the flow of energy and the cycling of matter.
Earth Science				
8.4	Identify scientific questions using collected and/or graphically represented evidence regarding the dependency of humans on the environment for different resources. Identify evidence that can help design a simple solution that minimizes the effect of humans on the environment, or explain the observed patterns that emerge between natural hazards and their related geological forces.	Use evidence to describe the uneven distribution of Earth's resources based on geoscience processes and for the effects of the consumption of those resources on Earth's systems. Use patterns from data about natural hazards to forecast and mitigate their effects and the effects of changes to global temperature on regional climate.	Construct an explanation based on evidence that the uneven distribution of Earth's resources results from geoscience processes and the effects of the consumption of those resources on Earth's systems. Analyze and interpret patterns from data about natural hazards to forecast and mitigate their effects and the effects of changes to global temperature on regional climate.	Evaluate and revise explanations based on evidence that the uneven distribution of Earth's resources results from geoscience processes and the effects of the consumption of those resources on Earth's systems. Analyze, interpret, and communicate patterns from data from multiple sources about natural hazards to forecast and mitigate their effects and the effects of changes to global temperature on regional climate.
8.4	Identify an optimal solution that monitors or mitigates the effects of the use of natural resources on the environment, using given criteria and constraints.	Use solutions that monitor or mitigate the effects of the use of natural resources on the environment and use successful solutions based on given criteria and constraints of the problem.	Design solutions that monitor or mitigate the effects of the use of natural resources on the environment and develop and use successful solutions based on defined criteria and constraints of the problem.	Design, evaluate, and revise solutions that monitor or mitigate the effects of the use of natural resources on the environment and evaluate successful solutions based on defined criteria and constraints of the problem.