UT SEED Standards	Next Generation Science Standards
Root Question 1	
6.1.1: Develop models to describe the atomic composition of simple molecules and extended structures.	MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures.
6.1.2: Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.
6.1.3: Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.	MS-PS3-1. Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
6.1.4: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.	MS-PS3-3. Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer.
6.1.5: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	MS-ETS1-1. Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.
6.1.6: Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.
6.1.7: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.
Root Question 2	
6.2.1: Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.	MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.
6.2.2: Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.	MS-ESS2-5. Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
6.2.3: Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.	MS-ESS2-6. Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
6.2.4: Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.	MS-ESS3-5. Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
Root Question 3	
6.3.1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and	MS-LS2-1. Analyze and interpret data to provide evidence for the effects of resource availability on

populations of organisms in an ecosystem.	organisms and populations of organisms in an ecosystem.
6.3.2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.	MS-LS2-2. Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
6.3.3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.	MS-LS2-3. Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
6.3.4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.	MS-LS2-4. Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
6.3.5: Evaluate competing design solutions for maintaining biodiversity and ecosystem services.	MS-LS2-5. Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
6.3.6: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.
Root Question 4	
6.4.1: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.	MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.
6.4.2: Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.	MS-ETS1-4. Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.
6.4.3: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.	MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.