

Unit: Theme and Main Idea

Learning Goal: Central Idea & Theme (6.R.6): Determine the main idea or theme of a passage, explain how it is developed through details, and provide an unbiased summary.

4. Application

- **I can** present the information I have read, including the main idea(s) and/or theme and important supporting details.

3. Proficient

Students will be able to explain how the details support the main idea or theme with evidence from literary and informational texts.

Informational Text

- **I can** explain how specific details work together to build a main idea throughout a text.
- **I can** identify details from the informational text that support the main idea.
- **I can** explain how the evidence supports the main idea of an informational text.

Literary Text

- **I can** explain how specific details and character's actions work together to build a theme or main idea throughout a text.
 - **I can** identify details from the literary text that support the main idea and theme.
 - **I can** identify the main idea of a literary text
 - **I can** identify the theme of a literary text

2. Approaching

Informational Text

- **I can** identify a detail from the informational text that supports the overall passage.
- **I can** explain how the evidence supports the main idea of an informational text.
- **I can** summarize the text

Literary Text

- **I can** explain how specific details and character's actions work together to build a theme or main idea throughout a text.
 - I can identify details from the literary text that support the main idea and theme.
 - I can identify the main idea of a literary text
 - I can identify the theme of a literary text
- **I can** summarize the text.

1. Beginning

Literary Text/informational Text

- **I can** recall at least three details from the text.

Unit: Text Evidence

Learning Goal: Cite textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text. (RL & RI)

4. Application

- I can present the information I have read, including the central idea(s) and important supporting details.

3. Proficient

Students will be able to explain how the details support the central idea or theme with evidence from literary and informational texts.

Informational Text

- **I can** identify the central idea of an informational text
- **I can** identify details from the informational text that support the central idea.
 - I can explain how the evidence supports the central idea of an informational text.
 - I can determine the difference between explicit and inferential evidence in an informational text.
 - I can identify explicit evidence in an informational text.
 - I can identify inferential evidence in an informational text.
 - I can find evidence in an informational text.

Literary Text

- **I can** identify the central idea or theme of a literary text
- **I can** identify details from the literary text that support the central idea or theme.
 - I can explain how the evidence supports the central idea or theme of an informational text.
 - I can determine the difference between explicit and inferential evidence in a literary text.
 - I can identify explicit evidence in a literary text.
 - I can identify inferential evidence in a literary text.
 - I can find evidence in a literary text.

2. Approaching

Informational Text

- **I can** identify details from the informational text.
 - I can identify explicit evidence in an informational text.
 - I can identify inferential evidence in an informational text.
 - I can find evidence in an informational text.

Literary Text

- **I can** identify details from the literary text.
 - I can identify explicit evidence in a literary text.
 - I can identify inferential evidence in a literary text.
 - I can find evidence in a literary text.

1. Beginning

Literary Text/informational Text

● **I can** answer an explicit text question
OR

● **I can** answer an inferential question.

Unit: Analyzing a Text

Learning Goal: Standard 6.R.10: Analyze how a sentence, paragraph, stanza, chapter, scene, or section fits into the overall structure and how it contributes to the development of theme, main idea, settings, or plot. (RL)
Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and how it contributes to the development of the main idea. (RI)

4. Application

Students can analyze how a specific structural choice (like a single scene, stanza, or section) alters the overall text, or how techniques like flashbacks and cause-and-effect organizational patterns deepen the main idea or theme.

Informational Text

- I **can** analyze how an author structures an entire article (such as cause/effect or problem/solution) to build a complex central idea.
- I **can** explain why a specific sentence, paragraph, or section is essential to making the author's main idea clear and convincing.

Literary Text

- I **can** explain how changing or removing a single sentence, scene, or stanza would completely alter the plot or theme.
- I **can** analyze how structural choices like flashbacks or foreshadowing deepen a story's meaning.
- I **can** teach others how different sections of a story or poem connect to create a powerful overall message.

3. Proficient

Students can explain how a specific sentence, paragraph, stanza, chapter, or scene fits into the overall structure of a text and contributes to the plot, setting, theme, or central idea.

Informational Text

- I **can** explain how a specific sentence, paragraph, chapter, or section fits into the overall structure of an informational text.
- I **can** describe how that specific part helps build and support the main idea.

Literary Text

- I **can** explain how a specific sentence, stanza, chapter, or scene fits into the overall structure of a story, play, or poem.
- I **can** describe how that specific part helps develop the theme, setting, or plot.

2. Approaching

Students can identify basic text structures (like chapters, scenes, stanzas, or compare/contrast formats) and summarize one section, but need help connecting it to the overall text or message.

Informational Text

- I **can** identify the organizational structure of an article, such as compare/contrast or chronological order.
- I **can** summarize a single paragraph, but I need help explaining how it connects to the main idea of the whole text.

Literary Text

- I **can** identify basic text structures, such as chapters in a novel, scenes in a play, or stanzas in a poem.
- I **can** describe what happens in a specific chapter or scene, but I need help connecting it to the overall plot or theme.

1. Beginning

Students can locate basic structural parts of a text (like sentences, paragraphs, or stanzas) and describe what happens in one small section with teacher support.

Informational Text

- **I can** locate paragraphs, headings, or sub-sections in an article.
- **I can** state what one paragraph is about with teacher support.

Literary Text

- **I can** point out basic parts of a text, such as sentences, paragraphs, or stanzas.
- **I can** describe what happens in one small part when my teacher helps me.

Unit: Evaluating Arguments

Learning Goal: Evaluating Arguments & Claims (6.RI.8): Trace and evaluate an author's argument, distinguishing claims that are supported by sound reasoning and relevant evidence from those that are not.

4. Application

- **I can** track an author's argument and explain why their reasons and proof are strong or weak.
- **I can** spot when an author makes a claim that is missing good evidence or doesn't make sense.

3. Proficient

- **I can** find the author's main claim and list the reasons and facts they give to support it.
- **I can** tell the difference between claims backed up by real proof and claims that lack evidence.

2. Approaching

- **I can** find the author's main claim in an article.
- **I can** point out facts in the text, but I need help deciding if they actually prove the author's point.

1. Beginning

- **I can** state what an article is mostly about.
- **I can** pick out a reason or fact from the text when my teacher helps me.

Unit: Text Structure

Learning Goal: Text Structure & Development (6.R.7 / 6.RL.5 / 6.RI.5): Analyze how specific sentences, chapters, scenes, or stanzas fit into the overall structure and contribute to the plot, theme, or main ideas.

4. Application

- **I can** explain how a single sentence, scene, or stanza changes the entire direction of a story or article.
- **I can** analyze how an author uses structure (like mystery, flashbacks, or problem/solution) to build a deeper theme or main idea.

3. Proficient

- **I can** explain how a specific chapter, scene, stanza, or sentence fits into the overall structure of a text.
- **I can** describe how that specific part helps build the plot, theme, or main idea.

2. Approaching

- **I can** identify the overall structure of a text (like chronological order, problem/solution, or stanzas in a poem).
- **I can** tell what happens in a specific chapter or scene, but I need help connecting it to the whole story.

1. Beginning

- **I can** point out basic parts of a text like sentences, paragraphs, scenes, or stanzas.
- **I can** describe what happens in one small part when my teacher helps me.

Unit: Author's Purpose

Learning Goal: Author's Point of View & Purpose (6.R.11): Explain how an author or narrator's point of view is developed and distinguished from other perspectives.

4. Application

- **I can** explain how an author uses specific words and details to build their viewpoint throughout a text.
- **I can** compare different perspectives and explain why two people or characters see the same event differently.

3. Proficient

- **I can** identify the author's or narrator's point of view or main purpose in a story or article.
- **I can** explain how their perspective is different from other characters, the reader, or another author.

2. Approaching

- **I can** identify the point of view being used in a story (like 1st person or 3rd person).
- **I can** tell how a character or author feels about a topic, but I need help explaining how their view compares to others.

1. Beginning

- **I can** tell who is telling the story or sharing information.
- **I can** name how a character feels with teacher support.

Unit: EE: Writing, Evaluating, & Distributing

Learning Goal: 6.EE.2 & 6.EE.3: Writing and evaluating algebraic expressions with variables and exponents; using the distributive property to write equivalent expressions (e.g.,).

4. Application

- **I can** write and solve complex expressions with multiple variables and exponents. **I can** prove why two expressions are equal using math rules.
- **I can** create my own real-world story problems that match a given algebraic expression.

3. Proficient

- **I can** write, read, and evaluate expressions that contain letters (variables) and exponents.
- **I can** use the distributive property to write equivalent expressions, like turning into .

2. Approaching

- **I can** solve simple expressions when given the value of a variable.
- **I can** use the distributive property with whole numbers, but I need help when variables are added.

1. Beginning

- **I can** identify variables, exponents, and operations in a math problem.
- **I can** solve basic numerical expressions with teacher support.

Unit: EE: Solving Equations

Learning Goal: 6.EE.7: Solving one-step equations (and) using non-negative rational numbers.

4. Application

- **I can** write and solve one-step equations with tricky fractions and decimals to answer real-world challenges.
- **I can** explain how inverse operations undo math steps to isolate the variable.
- **I can** create my own word problems that match a given one-step equation and teach my solving strategies to others.

3. Proficient

- **I can** solve one-step addition and multiplication equations (and) using non-negative whole numbers, fractions, and decimals.
- **I can** write a one-step equation to model and solve a real-world problem.

2. Approaching

- **I can** solve simple one-step addition and multiplication equations using whole numbers.
- **I can** match a real-world story problem to its correct one-step equation when given a list of choices.

1. Beginning

- **I can** identify the unknown variable in a simple equation.
- **I can** test given numbers to see if they make an equation true with teacher support.

Unit: Geometry

Learning Goal 1: 6.G.1: Find & solve the area of composite shapes by decomposing them into triangles and rectangles.

4. Application

- **I can** split complex shapes in multiple different ways and explain why every method gives the exact same total area.
- **I can** design my own complex real-world floor plan and accurately calculate their total area.

3. Proficient

- **I can** find the area of composite shapes by decomposing them into rectangles and triangles.
- **I can** use area formulas for triangles and rectangles correctly and add the areas together to get the total.

2. Approaching

- **I can** split a composite shape into rectangles and triangles when grid lines or dotted lines guide me.
- **I can** find the area of simple rectangles and right triangles using formulas.

1. Beginning

- **I can** identify basic shapes like triangles and rectangles hiding inside a larger shape.
- **I can** count square units on a grid to estimate total area with teacher support.

Unit: Number System Decimals

Learning Goal: 6.NS.3: Fluently computing with multi-digit decimals (addition, subtraction, multiplication, and division).

4. Application

- **I can** teach someone else how solve multi-step real-world money and measurement problems using all four decimal operations.
- **I can** catch and fix calculation mistakes by checking place value and using estimation to prove my answer makes sense

3. Proficient

- **I can** fluently add, subtract, multiply, and divide multi-digit decimals using standard algorithms.
- **I can** line up decimal points correctly for addition and subtraction, and place the decimal point accurately when multiplying or dividing.

2. Approaching

- **I can** add and subtract multi-digit decimals accurately.
- **I can** multiply or divide decimals when given place value templates or step-by-step hints.

1. Beginning

- **I can** line up simple decimals on grid paper using place value headings.
- **I can** add and subtract basic decimal numbers with teacher support.

Unit: Number System Fractions

Learning Goal: 6.NS.1: Dividing fractions by fractions using visual models and standard algorithms.

4. Application

- **I can** create my own real-world story contexts and visual fraction models to explain fraction division problems.
- **I can** teach someone else why fraction division works using the inverse relationship between multiplication and division.

3. Proficient

- **I can** solve all types of division of fractions problems using visual fraction models, equations, and standard division strategies.
- **I can** solve real-world word problems involving division of fractions by fractions.

2. Approaching

- **I can** divide a fraction by a whole number or a whole number by a fraction using a visual model.
- **I can** calculate simple fraction division problems, but I need help modeling or setting up equations from story contexts.

1. Beginning

- **I can** represent basic fractions using visual shape models or fraction strips.
- **I can** identify the numerators and denominators in a fraction problem with teacher support.

Unit: Ratios & Proportions

Learning Goal: 6.RP.3 (Highest Focus): Solving multi-step ratio and rate problems using ratio tables, double number lines, tape diagrams, and coordinate graphs.

4. Application

- **I can** explain why a specific tool (like a table, tape diagram, or graph) is the best choice for a multi-step problem.
- **I can** solve real-world ratio and rate challenges with multiple steps and teach my strategies to others.

3. Proficient

- **I can** use ratio tables, double number lines, tape diagrams, and coordinate graphs to solve multi-step ratio problems.
- **I can** find missing values, calculate unit rates, and plot ratio pairs on a coordinate plane.

2. Approaching

- **I can** use one ratio tool (like a table) to solve simple, one-step ratio problems.
- **I can** plot points on a graph when given a completed ratio table, but I need help with multi-step problems.

1. Beginning

- **I can** set up a basic ratio comparison using numbers or picture models.
- **I can** fill in missing numbers on a simple ratio table with teacher support.

Unit: Statistics

Learning Goal: 6.SP.4 & 6.SP.5: Reading and interpreting data displays (dot plots, box plots, histograms) and calculating measures of center (mean, median) and spread (range, IQR).

4. Application

- **I can** compare two different data sets by analyzing their shape, center, and spread to explain real-world patterns.
- **I can** explain how extreme values (outliers) pull the mean away from the median.
- **I can** write a full statistical summary that uses data to answer a real-world question and predict future trends.

3. Proficient

- **I can** read and create dot plots, box plots, and histograms from a given set of data.
- **I can** calculate measures of center, including the mean (average) and median (middle value).
- **I can** calculate measures of spread, including the range (difference between maximum and minimum) and Interquartile Range (IQR).
- **I can** describe the overall shape of a data graph, including peaks, clusters, gaps, and symmetry.

2. Approaching

- **I can** read basic values from a pre-made dot plot or histogram.
- **I can** find the median and range of a data set when the numbers are already put in order from smallest to largest.
- **I can** calculate the mean with step-by-step guidance, but I need help finding the IQR or constructing box plots.

1. Beginning

- **I can** count dots on a dot plot or read the height of bars on a histogram.
- **I can** identify the highest and lowest numbers in a list of data.
- **I can** state what the mean and median are with teacher support.

Unit: Water Cycle

Learning Goal: 6.3.1 Develop a model to describe how the cycling of water through Earth's systems is driven by energy from the Sun, gravitational forces, and density. (ESS2.C)

4. Application

- **I can** explain how solar energy, density changes, and gravity work together to move water between reservoirs like oceans, plants, and the atmosphere. **I can** use my model to predict how a change in Earth's systems affects the water cycle.
- **I can** teach others how transpiration and evaporation transfer energy and matter across Earth.

3. Proficient

- **I can** develop a model showing how water cycles through Earth's systems via evaporation, transpiration, condensation, precipitation, and downhill flow.
- **I can** explain how sunlight and gravity provide the energy and force needed to move water from place to place.

2. Approaching

- **I can** label the main parts of the water cycle, such as evaporation and precipitation, on a diagram.
- **I can** state that the Sun warms water and gravity pulls rain downward, but I need help explaining density.

1. Beginning

- **I can** identify where water is stored on Earth, like oceans and clouds.
- **I can** match basic water cycle terms to pictures with teacher support.

Unit: Weather Conditions

Learning Goal: 6.3.2: Investigate the interactions between air masses that cause changes in weather conditions. Collect and analyze weather data to provide evidence for how air masses flow from regions of high pressure to low pressure causing a change in weather. Examples of data collection could include field observations, laboratory experiments, weather maps, or diagrams. (ESS2.C, ESS2.D)

4. Application

- **I can** analyze weather maps with high and low pressure systems to accurately forecast upcoming weather changes and fronts.
- **I can** explain the cause-and-effect relationship between colliding air masses and storm formation.
- **I can** design an investigation showing how differences in air pressure create wind.

3. Proficient

- **I can** collect and analyze weather data to show that air masses flow from high-pressure areas to low-pressure areas.
- **I can** explain how interactions between warm and cold air masses cause changes in local weather conditions.

2. Approaching

- **I can** read basic weather map symbols like temperature and precipitation.
- **I can** state that wind blows from high to low pressure, but I need help explaining how air masses create weather fronts.

1. Beginning

- **I can** observe and describe daily weather conditions like temperature and rain.
- **I can** identify high and low pressure symbols on a weather map with help.

Unit: Unequal Heating and Global Circulation

Learning Goal: 6.3.3: **Develop and use a model** to show how unequal heating of the Earth's systems causes patterns of atmospheric and oceanic circulation that determine regional climates. Emphasize how warm water and air move from the equator toward the poles. Examples of models could include Utah regional weather patterns such as lake-effect snow or wintertime temperature inversions. (ESS2.C, ESS2.D)

4. Application

- **I can** analyze how unequal solar heating and circulation patterns create specific regional weather phenomena, such as Utah's lake-effect snow or wintertime temperature inversions.
- **I can** predict how changes in global air or ocean currents would shift regional climate zones around the world.

3. Proficient

- **I can** develop and use a model to show how unequal heating causes warm air and water to move from the equator toward the poles.
- **I can** explain how atmospheric and oceanic circulation patterns determine regional climates across Earth.

2. Approaching

- **I can** state that the equator receives more heat from the Sun than the poles and that warm air rises while cool air sinks.
- **I can** identify basic weather patterns, but I need help connecting global circulation to regional climates or local inversions.

1. Beginning

- **I can** point out hot and cold climate regions on a world map.
- **I can** state that warm air rises with teacher guidance.

Unit: The Natural Greenhouse Effect & Energy Balance

Learning Goal: 6.3.4: **Construct an explanation** supported by evidence for the role of the natural greenhouse effect in Earth's energy balance, and how it enables life to exist on Earth. Examples could include comparisons between Earth and other planets such as Venus or Mars. (ESS2.D)

4. Application

- **I can** evaluate data comparing Earth's natural greenhouse effect and energy balance to planets like Venus or Mars to explain temperature stability and habitability.
- **I can** explain how changes in greenhouse gas concentrations would shift Earth's energy budget and global climate.

3. Proficient

- **I can** construct an explanation supported by evidence for how the natural greenhouse effect traps heat in the atmosphere.
- **I can** explain how Earth's energy balance (energy absorbed vs. energy released) enables life to exist on Earth.

2. Approaching

- **I can** define the greenhouse effect and state that Earth absorbs solar energy and releases heat into space.
- **I can** list key greenhouse gases, but I need help explaining how Earth's energy budget compares to other planets like Venus or Mars.

1. Beginning

- **I can** state that Earth's atmosphere holds heat like a blanket to keep Earth warm.
- **I can** identify that living things need Earth's warmth to survive with teacher support.

Unit: Sun-Earth-Moon

Learning Goal: Standard(s) 6.1.1: Develop and use a model of the Sun-Earth-Moon system to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons. Examples of models could be physical, graphical, or conceptual. (ESS1.A, ESS1.B)

4. Application

- **I can** evaluate and refine a model to explain why solar and lunar eclipses do not occur every month due to the tilt of the Moon's orbital plane.
- **I can** use my model to predict how altering Earth's axial tilt would affect seasonal temperature swings and daylight hours across the globe.

3. Proficient

- **I can** develop and use a model of the Sun-Earth-Moon system to describe the cyclic patterns of lunar phases and eclipses of the Sun and Moon.
- **I can** use a model to show how Earth's tilted axis and revolution around the Sun cause changing seasons throughout the year.

2. Approaching

- **I can** identify the main phases of the Moon and demonstrate how Earth orbits the Sun while the Moon orbits Earth.
- **I can** state that Earth's tilt causes seasons, but I need help using a model to explain how light hits Earth at different times of the year.

1. Beginning

- **I can** state that the Sun provides light to Earth and the Moon, and that the Moon changes appearance in the sky.
- **I can** identify the Sun, Earth, and Moon in a simple diagram with teacher support.

Unit: Scale

Learning Goal: 6.1.3: Use computational thinking to analyze data and determine the scale and properties of objects in the solar system. Examples of scale could include size or distance. Examples of properties could include layers, temperature, surface features, or orbital radius. Data sources could include Earth and space-based instruments such as telescopes or satellites. Types of data could include graphs, data tables, drawings, photographs, or models.

4. Application

- **I can** analyze complex datasets from space instruments to construct proportional scale models and evaluate how distance from the Sun influences an object's surface temperature and composition.
- **I can** compare patterns across different categories of solar system bodies (like terrestrial planets vs. gas giants vs. dwarf planets) to explain differences in their physical properties.

3. Proficient

- **I can** use computational thinking to analyze data tables, graphs, or images to determine the scale (size and distance) of solar system objects.
- **I can** identify and compare properties of objects in our solar system, such as layers, temperature, surface features, and orbital radius.

2. Approaching

- **I can** read basic properties (such as temperature, diameter, or number of moons) from a simple planet comparison table or chart.
- **I can** state that planets differ in size and distance from the Sun, but I need help using calculations or proportional reasoning to compare relative scales.

1. Beginning

- **I can** arrange planets in order of their distance from the Sun.
- **I can** identify basic visual features of celestial objects (like rocky surfaces or gas rings) with teacher support.

Unit: Interactions

Learning Goal: Standard(s) 6.4.2: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. Emphasize consistent interactions in different environments such as competition, predation, and mutualism. (LS2.A)

4. Application

- **I can** evaluate how introducing or removing a species impacts competitive, predatory, or mutualistic relationships across connected ecosystems.
- **I can** compare interaction patterns across vastly different environments (like Utah deserts and ocean reefs) to explain why these ecological relationships stay consistent.

3. Proficient

- **I can** construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.
- **I can** identify and describe consistent interaction relationships, including competition, predation, and mutualism, in different environments.

2. Approaching

- **I can** define and give examples of competition, predation, and mutualism within a single familiar ecosystem.
- **I can** describe how two organisms interact, but I struggle to predict or explain interaction patterns across different environments.

1. Beginning

- **I can** identify basic predator-prey relationships, such as an owl eating a mouse.
- **I can** match simple pairs of organisms to basic relationship types with teacher support.

Unit: Resource Availability

Learning Goal: Standard(s) 6.4.1: Analyze data to provide evidence for the effects of resource availability on organisms and populations in an ecosystem. Ask questions to predict how changes in resource availability affects organisms in those ecosystems. Examples could include water, food, or living space in Utah environments. (LS2.A)

4. Application

- **I can** analyze complex population data and ask testable scientific questions to predict how natural events (like drought) or human impacts will affect Utah ecosystems.
- **I can** evaluate cause-and-effect relationships between resource scarcity and long-term population shifts, competition, or migration in local habitats.

3. Proficient

- **I can** analyze data to provide evidence showing how the availability of resources (like water, food, or living space) affects organisms and populations in an ecosystem.
- **I can** ask questions to predict how changes in resource availability will impact organisms in Utah environments.

2. Approaching

- **I can** read basic population graphs or data tables showing changes in food, water, or habitat space.
- **I can** state that populations increase when resources are abundant and decrease when resources are scarce, but I need help formulating questions to predict trends.

1. Beginning

- **I can** identify basic resources that living things need to survive, such as water, food, and shelter.
- **I can** state what happens to a plant or animal when it doesn't get enough water with teacher support.

Unit: Energy Effects Matter

Learning Goal: Standard(s) 6.2.1 & 6.2.2

6.2.1: **Develop models** to show that molecules are made of different kinds, proportions, and quantities of atoms. Emphasize understanding that there are differences between atoms and molecules, and that certain combinations of atoms form specific molecules. Examples of simple molecules could include water (H₂O), atmospheric oxygen (O₂), or carbon dioxide (CO₂). (PS1.A)

4. Application

Atoms

- **I can** evaluate and refine molecular models to predict how changing the proportion or type of atoms creates an entirely different substance with new properties.
- **I can** explain how different atomic arrangements account for the differences between simple molecules (like , ,) and extended crystalline structures.

3. Proficient

- **I can** develop models to show that molecules are made of different kinds, proportions, and quantities of atoms.
- **I can** explain the difference between individual atoms and molecules using examples like water (), atmospheric oxygen (), or carbon dioxide ().

2. Approaching

- **I can** identify the individual atoms in a simple molecule formula or model, such as counting 2 Hydrogen and 1 Oxygen atom in .
- **I can** state that molecules are made of combined atoms, but I need help modeling how different proportions form specific molecules.

1. Beginning

- **I can** state that all matter is made of tiny building blocks called atoms.
- **I can** identify a basic molecule diagram with teacher support.

Unit: Matter Cycling and Energy Flow

Learning Goal: Standard 6.4.3: Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. Emphasize food webs and the role of producers, consumers, and decomposers in various ecosystems. Examples could include Utah ecosystems such as mountains, Great Salt Lake, wetlands, or deserts.

4. Application

- **I can** evaluate how a disruption (like losing a key producer or top predator) impacts energy flow and matter cycling across a complex food web.
- **I can** adapt my model to compare how energy and matter move through different Utah ecosystems, such as the Great Salt Lake, desert, or mountain wetlands.

3. Proficient

- **I can** develop a model to describe how matter cycles and energy flows among living and nonliving parts of an ecosystem.
- **I can** explain the roles of producers, consumers, and decomposers within a food web in Utah ecosystems like mountains, deserts, or wetlands.

2. Approaching

- **I can** create a basic food chain showing how energy moves from producers to consumers.
- **I can** identify producers, consumers, and decomposers, but I need help modeling how matter cycles back to nonliving parts like soil and air.

1. Beginning

- **I can** categorize living things as producers (plants) or consumers (animals).
- **I can** trace a simple path of food energy from a plant to an animal with teacher support.

Unit: Heat Transfer

Learning Goal: 6.2.2: **Develop a model** to predict the effect of heat energy on states of matter and density. Emphasize the arrangement of particles in states of matter (solid, liquid, or gas) and during phase changes (melting, freezing, condensing, and evaporating). (PS1.A, PS3.A)

4. Application

- **I can** evaluate and refine a particle model to predict how thermal energy transfer affects both particle kinetic energy and fluid density during phase changes.
- **I can** explain real-world thermal phenomena—such as thermal expansion or why ice floats due to density changes—using particle motion models.

3. Proficient

- **I can** develop a model to predict the effect of heat energy on states of matter (solid, liquid, gas) and density.
- **I can** describe how particle arrangement and motion change during phase changes like melting, freezing, condensing, and evaporating.

2. Approaching

- **I can** identify the three main states of matter (solid, liquid, gas) and name phase changes like melting, freezing, and evaporating.
- **I can** state that adding heat speeds up particles and removing heat slows them down, but I struggle to connect particle arrangement to density changes.

1. Beginning

- **I can** classify common substances as solids, liquids, or gases.
- **I can** identify that adding heat melts ice into liquid water with teacher support.

Unit: Heat Energy Investigation

Learning Goal: 6.2.3: **Plan and carry out an investigation** to determine the relationship between temperature, the amount of heat transferred, and the change of average particle motion in various types or amounts of matter. Emphasize recording and evaluating data, and communicating the results of the investigation. (PS3.A)

4. Application

- **I can** design and conduct an investigation to test how varying both the type and amount of matter affects the rate of thermal energy transfer.
- **I can** evaluate experimental data and sources of error to clearly communicate how mass, temperature change, and average particle kinetic energy are mathematically related.

3. Proficient

- **I can** plan and carry out an investigation to determine the relationship between temperature, the amount of heat transferred, and the change in average particle motion.
- **I can** record, evaluate, and communicate data showing how thermal energy transfer affects different types or amounts of matter.

2. Approaching

- **I can** carry out a given investigation to measure temperature changes when heat energy is added to or removed from a sample.
- **I can** record temperature data in a table, but I need help evaluating patterns or connecting the data to average particle motion.

1. Beginning

- **I can** use a thermometer to measure and record the temperature of warm and cold liquids.
- **I can** state that adding heat increases temperature with teacher support.

Unit: Ecosystem Stability

Learning Goal: Standard 6.4.4: Construct an argument supported by evidence that the stability of populations is affected by changes to an ecosystem. Emphasize how changes to living and nonliving components in an ecosystem affect populations in that ecosystem. Examples could include Utah ecosystems such as mountains, Great Salt Lake, wetlands, or deserts. (LS2.C)

4. Application

- **I can** evaluate multiple lines of evidence to construct a comprehensive scientific argument predicting how a major change in abiotic factors (like severe drought or pollution) or biotic factors (like invasive species) cascades through a Utah ecosystem.
- **I can** evaluate solutions or management plans designed to maintain ecosystem stability and protect native populations.

3. Proficient

- **I can** construct an argument supported by evidence showing that changes to living and nonliving components in an ecosystem affect population stability.
- **I can** explain how specific ecosystem changes in Utah environments (such as mountains, Great Salt Lake, wetlands, or deserts) impact native populations.

2. Approaching

- **I can** identify living (biotic) and nonliving (abiotic) changes in an ecosystem, such as changes in rainfall, temperature, or food sources.
- **I can** state that ecosystem changes cause populations to increase or decrease, but I struggle to support my claim with a complete evidence-based argument.

1. Beginning

- **I can** give examples of living parts (plants and animals) and nonliving parts (water, sunlight, dirt) of a Utah ecosystem.
- **I can** state that animals or plants are affected when their habitat changes, with teacher support.

Unit: Gravity and Inertia

Learning Goal: Standard(s) 6.1.2: Develop and use a model to describe the role of gravity and inertia in orbital motions of objects in our solar system. (ESS1.B)

4. Application

- **I can** evaluate and refine a model to predict how changing an object's mass, distance, or forward speed alters its orbit or causes it to fly off into space.
- **I can** explain how the balance between gravity pulling inward and inertia moving forward creates stable, elliptical orbits for planets and moons.

3. Proficient

- **I can** develop and use a model to describe the role of gravity and inertia in the orbital motions of objects in our solar system.
- **I can** explain that gravity pulls objects toward the Sun while inertia keeps them moving forward, creating an orbit.

2. Approaching

- **I can** state that gravity keeps planets in orbit around the Sun and moons around planets.
- **I can** define inertia as an object's tendency to keep moving, but I need help modeling how it combines with gravity to form an orbit.

1. Beginning

- **I can** identify gravity as the pulling force that holds the solar system together.
- **I can** state that planets travel around the Sun in paths called orbits with teacher support.

Unit: Heat Transfer

Learning Goal: 6.2.4: **Design** an object, tool, or process that minimizes or maximizes heat energy transfer. Identify criteria and constraints, develop a prototype for iterative testing, analyze data from testing, and propose modifications for optimizing the design solution. Emphasize demonstrating how the structure of differing materials allows them to function as either conductors or insulators. (PS3.A, PS3.B, ETS1.A, ETS1.B, ETS1.C)

4. Application

- **I can** analyze testing data to propose optimized modifications that maximize or minimize heat transfer while balancing complex criteria and constraints.
- **I can** explain how the microscopic structure of specific materials determines their performance as thermal conductors or insulators in an engineering design.

3. Proficient

- **I can** design, build, and iteratively test a prototype tool or object that minimizes or maximizes heat energy transfer based on identified criteria and constraints.
- **I can** analyze test data to propose modifications for optimizing the design and demonstrate how material choices function as conductors or insulators.

2. Approaching

- **I can** build and test a simple thermal prototype using given criteria and constraints.
- **I can** classify materials used in my design as conductors or insulators, but I need help analyzing testing data to propose design optimizations.

1. Beginning

- **I can** identify everyday examples of thermal conductors (metal) and insulators (foam, wood).
- **I can** assist in building or testing a basic heat-transfer device with teacher support.

Unit: Ecosystem Design

Learning Goal: Standard 6.4.5: Evaluate competing design solutions for preserving ecosystem services that protect resources and biodiversity based on how well the solutions maintain stability within the ecosystem. Emphasize obtaining, evaluating, and communicating information of differing design solutions. Examples could include policies affecting ecosystems, responding to invasive species, or solutions for the preservation of ecosystem resources specific to Utah, such as air and water quality and prevention of soil erosion. (LS2.C, LS4.D, ETS1.A, ETS1.B, ETS1.C)

4. Application

- **I can** obtain, evaluate, and communicate information from multiple sources to compare competing design solutions for protecting Utah ecosystem services and biodiversity.
- **I can** justify which design solution best balances ecosystem stability and human needs while predicting potential trade-offs or unintended consequences.

3. Proficient

- **I can** obtain, evaluate, and communicate information about competing design solutions for preserving ecosystem services that protect resources and biodiversity.
- **I can** evaluate how well differing design solutions (such as Utah air/water quality policies, invasive species control, or soil erosion prevention) maintain ecosystem stability.

2. Approaching

- **I can** identify different design solutions or policies intended to protect ecosystem services, biodiversity, or resources like air, water, and soil in Utah.
- **I can** describe how a design solution helps an ecosystem, but I struggle to compare competing solutions or evaluate their impact on overall stability.

1. Beginning

- **I can** list basic resources that humans and wildlife need, such as clean air, fresh water, and fertile soil.
- **I can** identify a simple action that helps protect an environment with teacher support.