

Proficiency Level Descriptors – Science 4

Policy

Students who are designated Below Proficient (Level 1) will be able to perform up to the level described by the Proficiency Level Descriptor (PLD). Level 1 is the lowest reported proficiency designation; some student may perform below the provided description.

- Below Proficient – The Level 1 Student is below proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The Student generally performs significantly below the standard for his or her grade level, is likely able to partially access grade-level content and engage with higher-order thinking skills with extensive support.
- Approaching Proficient – The Level 2 Student is approaching proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The Student generally performs slightly below the standard for his or her grade level, is likely able to access grade-level content and engage in higher-order thinking skills with some independence and support.
- Proficient - The Level 3 Student is proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The Student generally performs at the standard for his or her grade level, is able to access grade level content, and engage in higher order thinking skills with some independence and minimal support.
- Highly Proficient - The Level 4 Student is highly proficient in applying the science knowledge/skills as specified in the Utah Core State Standards. The Student generally performs significantly above the standard for his or her grade level, is able to access above grade level content, and engage in higher order thinking skills independently.

Water Cycle

Objective I.1 Describe the relationship between heat energy, evaporation, and condensation of water on Earth.

- Below Proficient – The Level 1 Student - Identifies that water is stored in various locations. Describes the sun as an energy source that results in evaporation. Identifies examples of the states of water.
- Approaching Proficient – The Level 2 Student - Recognizes relative percentages of water found in various locations on Earth. Creates a model showing the sun as an energy source that results in

evaporation. Gives examples of the states of water pertaining to evaporation and condensation.

- Proficient – The Level 3 Student - Compares the locations and percentages of water found in various locations on Earth. Investigates and records data showing the effect of temperature on the state of water. Records evidence of evaporation and condensation.
- Highly Proficient – The Level 4 Student - Compares and contrasts the effects of temperature change on evaporation and condensation. Collects, records, and interprets data from an experiment of changing states of water. Forms predictions of states of water from data.

Objective I.2 – Describe the water cycle

- Below Proficient – The Level 1 Student – Identifies the processes of evaporation, condensation, and precipitation. Draws a simple diagram or model of the water cycle.
- Approaching Proficient – The Level 2 Student – Describes the processes of evaporation, condensation, and precipitation. Explains how water passes through the water cycle and is distributed to different locations. Constructs and labels a diagram modeling the water cycle.
- Proficient – The Level 3 Student – Constructs a model of the processes of evaporation, condensation, and precipitation. Identifies that evaporation occurs from people, plants, ice, and ground water. Supports predictions and inferences based on the water cycle with data and evidence. Using provided resources, constructs a complex diagram of the water cycle including the concept that the total amount of water on Earth is constant.
- Highly Proficient – The Level 4 Student – Independently constructs a complex diagram of the water cycle. Explains how the water cycle affects human activities.

Weather

Objective II.1 – Observe, measure, and record the basic elements of weather.

- Below Proficient – The Level 1 Student – Identifies clouds using a cloud chart. Observes and records data on simple elements of weather using a provided resource. Recognizes examples showing that air is a substance. Differentiates between severe weather phenomena and normal weather conditions.

- Approaching Proficient – The Level 2 Student – Observes and records data on the basic elements of weather, including identifying basic cloud types. Demonstrates that air is a substance. Lists characteristics of different severe and normal weather conditions.
- Proficient – The Level 3 Student – Observes, measures, and records data on the basic elements of weather. Compares and contrasts different cloud types. Compares and contrasts severe weather and normal weather conditions. Uses a variety of examples to show that air is a substance (e.g., flying a kite, blowing up a balloon).
- Highly Proficient – The Level 4 Student – Interprets data on the basic elements of weather to make weather inferences. Compares, contrasts, and reports on the air temperature differences recorded during a thunderstorm and a rainstorm. Experiments, investigates, and explains air as a substance and its effect on weather.

Objective II.2 – Interpret recorded weather data for simple patterns.

- Below Proficient – The Level 1 Student – Collects data and completes a pre-made graph, including cloud patterns, precipitation, and temperature. Identifies that strong winds typically indicate a change in weather. Identifies how air temperatures affect the type of precipitation. Identifies seasonal weather patterns.
- Approaching Proficient – The Level 2 Student – Collects and graphs data on cloud type, temperature, and precipitation. Characterizes daily and seasonal weather patterns. Describes the wind patterns that result in an approaching front and the accompanying change in weather.
- Proficient – The Level 3 Student – Graphs daily weather change based on collected weather data including precipitation, temperature, and wind direction and force.
- Highly Proficient – The Level 4 Student – Collects and analyzes weather data to make inferences about daily and seasonal patterns. Given a real world situation, infers and predicts the connections of weather change due to wind, temperature, and precipitation on seasonal weather patterns.

Objective II.3 – Evaluate weather predictions based upon observational data.

- Below Proficient – The Level 1 Student – Identifies the tools meteorologists use to collect basic weather data. Uses a weather prediction to influence daily decisions.
- Approaching Proficient – The Level 2 Student – Use tools meteorologists use to collect weather data. Describes how weather and

forecasts affect people's lives. Makes simple predictions of short-term weather.

- Proficient – The Level 3 Student – Collects weather data and uses it to predict short-term weather. Compares the accuracy of his or her own prediction to that of a professional weather forecast.
- Highly Proficient – The Level 4 Student – Develops an accurate forecast based on collected data to predict long-term weather. Justifies predictions using observable evidence.

Rocks, Soils, and Plant Growth

Objective III.1 – Identify basic properties of minerals and rocks.

- Below Proficient – The Level 1 Student – Observes and describes basic characteristics of sedimentary, igneous, metamorphic rocks, and minerals.
- Approaching Proficient – The Level 2 Student – Sorts rocks according to characteristics of sedimentary, igneous, and metamorphic rocks. Distinguishes between rocks and minerals.
- Proficient – The Level 3 Student – Compares and contrasts the characteristics of minerals and rocks. Names common rocks found in Utah.
- Highly Proficient – The Level 4 Student – Based on the evidence of colors, layers, observable crystals, holes, texture, etc., classifies common rocks found in Utah as sedimentary, igneous, or metamorphic.

Objective III.2 – Explain how the processes of weathering and erosion change and move materials that become soil.

- Below Proficient – The Level 1 Student – Identifies the processes of physical weathering from a visual representation.
- Approaching Proficient – The Level 2 Student – Distinguishes between weathering and erosion and identifies the causes of each.
- Proficient – The Level 3 Student – Models erosion. Explains that weathering and erosion contribute to soil formation. Predict the sources of sand and rocks in a locally collected soil sample.
- Highly Proficient – The Level 4 Student – Creates a scenario to show how processes of weathering and erosion can occur. Designs an investigation of a local soil sample leading to predictions of soil formation.

Objective III.3 – Observe the basic components of soil and relate the components to plant growth.

- Below Proficient – The Level 1 Student – From a list or visual representation, identifies the living, nonliving, and once-living components of soil.
- Approaching Proficient – The Level 2 Student – Labels the layers of a soil profile. Lists the components of soil.
- Proficient – The Level 3 Student – Explains how the components of soil contribute to the growth of plants. Constructs a model of a soil profile with the different layers and explains how the layers differ in composition. Describes how plant roots help control erosion.
- Highly Proficient – The Level 4 Student – Investigates ways plants can grow without soil. Explains the role of mineral nutrients in plant growth.

Fossils

Objective IV.1 – Describe Utah fossils and explain how they were formed.

- Below Proficient – The Level 1 Student – Identifies fossils as evidence of once-living organisms by matching visual representations of fossils to the original organisms. Identifies Utah locations where fossils are found.
- Approaching Proficient – The Level 2 Student – Identifies fossils as evidence of once-living organisms and compares them to familiar living organisms.
- Proficient – The Level 3 Student – Compares evidence of once-living organisms to familiar living organisms using shape, size, and structure. Explains the three ways fossils are formed. Constructs a map showing where fossils are found in Utah.
- Highly Proficient – The Level 4 Student – Constructs a fossil map of Utah and explain why certain areas have more fossils than others.

Objective IV.2 – Explain how fossils can be used to make inferences about past life, climate, geology, and environments.

- Below Proficient – The Level 1 Student – Identifies the environment of a once-living organism from a visual representation of fossils.
- Approaching Proficient – The Level 2 Student – Uses visual representations of fossils to explain how Utah's environments and climate have changed over time. States one theory for the extinction of dinosaurs.
- Proficient – The Level 3 Student – Explains two theories for the extinction of dinosaurs and other prehistoric organisms. Explains why fossils are usually found in sedimentary rock.

- Highly Proficient – The Level 4 Student – Justifies why fossils are usually found in sedimentary rock. Creates questions that can be investigated using geologic evidence to explain the extinction of prehistoric organisms.

Utah Wetlands, Forests, and Deserts

Objective V.1 – Describe the physical characteristics of Utah’s wetlands, forests, and deserts.

- Below Proficient – The Level 1 Student – Identifies a wetland, forest, or desert based on its physical characteristics from a visual representation.
- Approaching Proficient – The Level 2 Student – Identifies and describes two physical characteristics of Utah wetlands, forests, and deserts.
- Proficient – The Level 3 Student – Locates and compares Utah's wetlands, forests, and deserts using multiple examples of physical characteristics. Creates a basic model of wetlands, forests, and deserts.
- Highly Proficient – The Level 4 Student – Creates a detailed model of wetlands, forests, and deserts and explains why certain plants and animals are suited to those regions.

Objective V.2 – Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live.

- Below Proficient – The Level 1 Student – Identifies common plants and animals that inhabit each of Utah's environments.
- Approaching Proficient – The Level 2 Student – Describes characteristics of common plants and animals in specific Utah environments and lists physical features that allow them to live in these environments.
- Proficient – The Level 3 Student – Describes interactions between the plants and animals in Utah environments. Explains the effect elevation has on plant and animal life.
- Highly Proficient – The Level 4 Student – Uses a food chain to describe interactions between the plants and animals in Utah environments. Describes steps being taken to protect endangered Utah species.

Objective V.3 – Use a simple scheme to classify Utah plants and animals.

- Below Proficient – The Level 1 Student – Classifies familiar Utah plants and animals into simple groups, such as vertebrates and invertebrates or tree/shrub/grass.
- Approaching Proficient – The Level 2 Student – Classifies Utah plants and animals using a simple classification scheme, such as a dichotomous key.
- Proficient – The Level 3 Student – Classifies unfamiliar Utah plant and animals using a simple classification scheme, such as a dichotomous key. Explains how scientists use these schemes.
- Highly Proficient – The Level 4 Student – Classifies familiar and unfamiliar Utah plants and animals using a cladogram. Explains and evaluates how and why scientists use classification schemes.

Objective V.4 – Observe and record the behavior of Utah animals.

- Below Proficient – The Level 1 Student – With support, observes the behavior of Utah animals and records data in a pre-made graphic organizer.
- Approaching Proficient – The Level 2 Student – Observes, compares, and describes the behavior of Utah animals and records data in a pre-made graphic organizer.
- Proficient – The Level 3 Student – Observes, records, and describes the behavior and adaptations of Utah animals. Compares the similarities and differences between amphibians and reptiles. Sorts insects and spiders using classification schemes. Identifies animal adaptations that help Utah mammals survive the winter.
- Highly Proficient – The Level 4 Student – Explains animal adaptations that help Utah mammals survive the winter, and analyzes how these adaptations are beneficial.