

Inquiry Skills	Grade 4 TEKS Links
1. Set up a new, appropriate problem/application	2(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.
2. Pose relevant questions and develop hypotheses	2(A) plan and implement descriptive investigations including asking well-defined questions, formulating testable hypotheses, and selecting and using equipment and technology.
3. Make and test predictions	
4. Observations and measurements are accurate and appropriate	2(B) collect information by observing and measuring. 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses.
5. Equipment is used properly with appropriate safety procedures	1(A) demonstrate safe practices during field and laboratory investigations.
6. Quality assurance procedures are employed (multiple, repeated readings; recalibration) and measurement errors are detected	4(B) demonstrate that repeated investigations may increase the reliability of results.
7. Specify measurements and variables	
8. Identify similarities and differences	
9. Explain reasons for differences	
10. Use appropriate mathematical procedures	2(E) construct simple graphs, tables, maps, and charts to organize, examine, and evaluate information.
11. Infer patterns and trends	3(B) draw inferences based on information related to promotional materials for products and services.
12. Explain data and relationships using evidence	2(C) analyze and interpret information to construct reasonable explanations from direct and indirect evidence.
13. Collect and organize data	2(B) collect information by observing and measuring. 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses. 2(E) construct simple graphs, tables, maps, and charts to organize, examine, and evaluate information.
14. Use multiple forms to represent data	2(E) construct simple graphs, tables, maps, and charts to organize, examine, and evaluate information.
15. Use models and simulations	3(C) represent the natural world using models and identify their limitations.
16. Communicate findings	2(D) communicate valid conclusions.

GLOBE ATMOSPHERE Science Concepts	Grade 4 Direct TEKS Link*	Grade 4 InDirect TEKS Link*
1. The atmosphere has observable and/or measurable characteristics.	2(B) collect information by observing and measuring	
2. Clouds can be categorized by observable features.	2(B) collect information by observing and measuring	
3. Cloud cover and wind can affect atmospheric measurements.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses	
4. Cloud types can be associated with certain weather patterns and used to predict the weather.	6(A) identify patterns of change such as in weather, metamorphosis, and objects in the sky	
5. pH is a characteristic property that can be measured.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses	
6. Heat energy transfers through radiation, conduction, and convection.		
7. Substances transfer heat energy at different rates.		7(A) observe and record changes in the states of matter caused by the addition or reduction of heat
8. Some materials are good conductors of heat energy; some are good insulators of heat energy.		7(A) observe and record changes in the states of matter caused by the addition or reduction of heat
9. The transfer of heat energy affects temperature.		7(A) observe and record changes in the states of matter caused by the addition or reduction of heat

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE ATMOSPHERE Science Concepts	v Direct TEKS Link*	Grade 4 InDirect TEKS Link*
10. Substances expand and contract as the temperature changes.	7(A) observe and record changes in the states of matter caused by the addition or reduction of heat	
11. Classification helps to organize and understand the natural world.		
Atmosphere Enrichment Concepts	Grade 4 Direct TEKS Link*	Grade 4 nDirect TEKS Link*
1. Water has the unique property of expansion when changing from a liquid to a solid state.	7(A) observe and record changes in the states of matter caused by the addition or reduction of heat	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.
Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE HYDROLOGY Science Concepts	Grade 4 Direct TEKS Link*	Grade 4 InDirect TEKS Link*
1. Surface water exists in many forms and has observable and/or measurable characteristics.	2(B) collect information by observing and measuring 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy	
2. Surface water characteristics are related to the characteristics of the surrounding environment.		
3. A watershed guides water to a common watercourse.		
4. Watershed characteristics are related to the physical features of the land.		
5. The physical environment affects an organism's response patterns; organisms adapt and survive, move, or die.		8(A) identify characteristics that allow members within a species to survive and reproduce; 8 (B) compare adaptive characteristics of various species
6. pH is a characteristic property that can be measured.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy	
7. Classification helps to organize and understand the natural world.		

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Hydrology Enrichment Concepts	Grade 4 Direct TEKS Link*	Grade 4 InDirect TEKS Link*
1. Macro-invertebrates are sensitive indicators of water quality.		
2. Topographical maps provide 3-dimensional information about the land.	3(C) represent the natural world using models and identify their limitations	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.
Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE SOILS Science Concepts	Grade 4 Direct TEKS Link*
1. Soil has observable and/or measurable properties that change with time and location.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy 11(A) test properties of soils including texture, capacity to retain water, and ability to support life
2. The interaction of organisms, climate, parent material, topography, and time affect soil properties.	
3. Soil acts as an insulating layer, creating a measurable temperature gradient.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses
4. Environmental conditions affect the rate of decomposition in soil.	
5. The chemical and physical properties of soils make different soils useful in different ways.	
6. pH is a characteristic property that can be measured.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy
7. Classification helps to organize and understand the natural world.	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Soils Enrichment Concepts:	Grade 4 Direct TEKS Link*
1. There are 12 soil textures representing different amounts of sand-, silt-, and clay-sized particles.	11(A) test properties of soils including texture, capacity to retain water, and ability to support life
2. A soil profile can be classified according to its properties, such as horizon, color, structure, consistency, texture, root and rock distribution, density, pH, carbonates, and fertility.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy 11(A) test properties of soils including texture, capacity to retain water, and ability to support life
3. Infiltration is the rate at which water flows into the ground; the rate changes depending on the level of soil saturation, soil texture and structure, and land cover.	11(A) test properties of soils including texture, capacity to retain water, and ability to support life

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE LAND COVER Science Concepts	Grade 4 Direct TEKS Link*	Grade 4 InDirect TEKS Link*
1. A GLOBE Study Site has observable and/or measurable characteristics.	2(B) collect information by observing and measuring 4(A) collect and analyze information using tools including calculators, safety goggles, microscopes, cameras, sound recorders, computers, hand lenses, rulers, thermometers, meter sticks, timing devices, balances, and compasses 5(A) identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit 7(B) conduct tests, compare data, and draw conclusions about physical properties of matter including states of matter, conduction, density, and buoyancy	
2. A GLOBE Study Site represents a system with boundaries, and is a subset of the earth system.	5(A) identify and describe the roles of some organisms in living systems such as plants in a schoolyard, and parts in nonliving systems such as a light bulb in a circuit	
3. Earth's land surface is covered by a variety of naturally occurring vegetated ecosystems.		
4. The physical environment affects an organism's response patterns; organisms adapt and survive, move, or die.		8(A) identify characteristics that allow members within a species to survive and reproduce
5. The magnetic needle of a compass is attracted to Earth's Magnetic North and to some metal objects that are nearby.		
6. Classification helps to organize and understand the natural world.		

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Land Cover Enrichment Concepts	Grade 4 Direct TEKS Link*	Grade 4 InDirect TEKS Link*
1. Remote sensing is a technique used to create visual representations of data.	2(B) collect information by observing and measuring 3(C) represent the natural world using models and identify their limitations	
2. Image display is accomplished by conversion of stored data to a user-defined coded scheme and creating an image based on differences in measurement.		
3. Student remote sensing involves observations made without the use of touch (i.e., using eyes, ears, nose and skin surface).	2(B) collect information by observing and measuring	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE Seasons Science Concepts	Grade 4 Direct TEKS Link*
1. Seasonal changes can be observed.	2(B) collect information by observing and measuring
2. Seasonal changes follow an annual cycle. The magnitude of these changes varies from year to year.	
3. Seasonal patterns differ based on geographic location.	
4. Earth has many climate zones.	
5. Classification helps to organize and understand the natural world.	
Seasons Enrichment Concepts	Grade 4 Direct TEKS Link*
1. Bud-break is the period when leaf buds appear and grow.	
2. Senescence is the period when actively growing plant material dies.	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

GLOBE GPS Science Concepts	Grade 4 Direct TEKS Link*
1. The amount of sunlight that falls directly at a particular site on Earth varies throughout the year.	
2. The magnetic needle of a compass is attracted to Earth's Magnetic North and to some metal objects that are nearby.	
3. A map is a symbolic representation of a certain land area.	3(C) represent the natural world using models and identify their limitations
GPS Enrichment Concepts	Grade 4 Direct TEKS Link*
1. Universal time is a technique used to standardize time measurements.	
2. The spatial relationship between Earth and celestial objects can be used to determine location on Earth.	
3. The GPS is used to make accurate measurements of latitude and longitude.	

Direct Link = Students have the opportunity to practice this TEKS when they participate in GLOBE Student Activities that provide opportunities to learn this GLOBE concept.

Indirect Link = Students have the opportunity to practice this TEKS IF the teacher provides additional scaffolding during GLOBE Student Activities that provide opportunities to learn this GLOBE concept.