Introduction Student Learning Guide

Enduring Understandings

- Science is important for everyday decision making.
- Humans heavily impact the world around them.

Essential Questions

- How do I do science? How do I use the scientific process?
- How do you impact your world?

TEKS

B.1 In Environmental Systems, students conduct laboratory and field investigations, use scientific methods during investigations, and make informed decisions using critical thinking and scientific problem solving. Students study a variety of topics that include: biotic and abiotic factors in habitats, ecosystems and biomes, interrelationships among resources and an environmental system, sources and flow of energy through an environmental system, relationship between carrying capacity and changes in populations and ecosystems, and changes in environments.

1.A demonstrate safe practices during laboratory and field investigations, including appropriate first aid responses to accidents that could occur in the field such as insect stings, animal bites, overheating, sprains, and breaks; and

2.B know that scientific hypotheses are tentative and testable statements that must be capable of being supported or not supported by observational evidence. Hypotheses of durable explanatory power which have been tested over a wide variety of conditions are incorporated into theories;

2.C know that scientific theories are based on natural and physical phenomena and are capable of being tested by multiple independent researchers. Unlike hypotheses, scientific theories are well-established and highly-reliable explanations, but may be subject to change as new areas of science and new technologies are developed;

2.D distinguish between scientific hypotheses and scientific theories;

2.E follow or plan and implement investigative procedures, including making observations, asking questions, formulating testable hypotheses, and selecting equipment and technology;

2.F collect data individually or collaboratively, make measurements with precision and accuracy, record values using appropriate units, and calculate statistically relevant quantities to describe data, including mean, median, and range;

2.G demonstrate the use of course apparatuses, equipment, techniques, and procedures, including meter sticks, rulers, pipettes, graduated cylinders, triple beam balances, timing devices, pH meters or probes, thermometers, calculators, computers, Internet access, turbidity testing devices, hand magnifiers, work and disposable gloves, compasses, first aid kits, binoculars, field guides, water quality test kits or probes, soil test kits or probes, 100-foot appraiser's tapes, tarps, shovels, trowels, screens, buckets, and rock and mineral samples;

2.H use a wide variety of additional course apparatuses, equipment, techniques, materials, and procedures as appropriate such as air quality testing devices, cameras, flow meters, Global Positioning System (GPS) units, Geographic Information System (GIS) software, computer models, ~~densitometers, clinometers~~, and field journals;

2.I organize, analyze, evaluate, build models, make inferences, and predict trends from data;

2.J perform calculations using dimensional analysis, significant digits, and scientific notation; and

2.K communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.

Calendar

Date	Assignment	Homework & Reminders
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		
Day 8		
Day 9		
Day 10		
Day 11		
Day 12		

R	**Red:** I can define the words in the target
Y	**Yellow**: I can apply this target when it is similar to something that I have seen before
G	**Green:** I can confidently explain this target and can apply it to something I have never seen before.

TEKS	Target	R	Y	G	Lesson
2.B 2.C 2.D	1. Define **scientific hypothesis** and **scientific theory** and distinguish between each in given situations.				Hypothesis vs. Theory Probe
2.E	2. Apply the **scientific process** to a given situation.				I Can Control So Seedy Ad Experiment Desing Model Exp Design PPT
2.F 2.I 2.J 2.K	3. Analyze data and create appropriate visual representations.				So Seedy
1.A 2.E 2.G 2.H	4. Identify and demonstrate proper lab and outdoor/field safety.				SDS Safety Scavenger Hunt
B.1	5. Define **ecology** and **environmental science**.				Introduction Notes Introduction FA
B.1	6. Discuss trends in environmental science and how humans are impacting the environment.				Major Environmental Problems PPT Something's Fishy Introduction FA
B.1	7. Compare and identify examples of **biotic** and **abiotic** factors within an **ecosystem**.				Are Seeds Alive? Ecological Scavenger Hunt

(words in bold are critical vocabulary)

Sample Multiple Choice Questions

1. A factor that is being tested, as part of the hypothesis, in an experiment is called:
   A. an observation
   B. a prediction
   C. a constant
   D. a variable

2. Which of the following would not be a part of an organism's environment?
   A. available water
   B. its genetic make up
   C. vegetation
   D. air quality

3. Which of the following is considered to be a biotic factor?
   A. soil
   B. water
   C. tree
   D. air

4. According to the graph, which city had the greatest increase in rain between the two years?
    A. City 2
    B. City 5
    C. City 1
    D. City 4