



TEXAS PERFORMANCE STANDARDS PROJECT

Grade 1 Science Unit

Animal Nation

This guide links the *Animal Nation* unit to the Texas Essential Knowledge and Skills (TEKS) for first graders. *Animal Nation* is a science unit that allows students to explore animals and their needs for survival. Though a science unit, *Animal Nation* also leads students to practice skills in the other subject areas of English language arts, mathematics, and social studies. For example, students use writing as a tool for learning and research, which the English Language Arts TEKS cover; students display data in an organized form, which the Mathematics TEKS cover; and use critical thinking skills, which the Social Studies TEKS cover. The following document includes the applicable TEKS and the details of the *Animal Nation* unit. The final section of this document presents the applicable Texas College Readiness Standards adopted by the Texas Higher Education Coordinating Board (THECB) on January 24, 2008.

Texas Essential Knowledge and Skills

This unit may address the following TEKS:

Science:

- 1.1 Conducts classroom and field investigations following home and safety procedures
- 1.2 Develops abilities necessary to do scientific inquiry in the field and the classroom
- 1.3 Knows that information and critical thinking are used in making decisions
- 1.4 Uses age-appropriate tools and models to verify that organisms and objects and parts of organisms and objects can be observed, described, and measured
- 1.6 Knows that systems have parts and are composed of organisms and objects
- 1.7 Knows that many types of change occur
- 1.9 Knows that living organisms have basic needs

English Language Arts:

- 1.1 Understands how English is written and printed
- 1.2 Displays phonological awareness
- 1.3 Uses the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English
- 1.4 Comprehends a variety of texts, drawing on useful strategies as needed
- 1.5 Reads grade-level text with fluency and comprehension
- 1.13 Analyzes, makes inferences, and draws conclusions about the author's purpose in cultural, historical, and contemporary contexts and provides evidence from the text to support their understanding
- 1.17 Uses elements of the writing process (planning, drafting, revising, editing, and publishing) to compose text

- 1.18 Writes literary texts to express their ideas and feelings about real or imagined people, events, and ideas
- 1.19 Writes expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes
- 1.24 Determines, locates, and explores the full range of relevant sources addressing a research question and systematically record the information they gather
- 1.27 Uses comprehension skills to listen attentively to others in formal and informal settings
- 1.28 Speaks clearly and to the point, using the conventions of language

Mathematics:

- 1.1 Uses whole numbers to describe and compare quantities
- 1.2 Uses pairs of whole numbers to describe fractional parts of whole objects or sets of objects
- 1.7 Compares the attributes of length, area, weight/mass, capacity, and temperature
- 1.9 Displays data in an organized form
- 1.10 Uses information from organized data
- 1.13 Uses logical reasoning

Social Studies:

- 1.3 Understands the concepts of time and chronology
- 1.17 Applies critical-thinking skills to organize and use information acquired from a variety of sources, including electronic technology
- 1.18 Communicates in written, oral, and visual forms
- 1.19 Uses problem-solving and decision-making skills, working independently and with others, in a variety of settings

Description of Unit

Students will study different animals to learn about their basic needs and ecosystems in which they live. Students will choose an animal to observe, describe, and research, determining its basic needs and how they are met. Students will then discuss different outcomes for their animals if their needs are not met. Their learning will culminate in an animal report in which they will predict their animals' future if their needs are not met and present their predictions to the class.

Goals

Students will meet these goals in their explorations:

- Develop the essential skills of logical thinking, creative problem solving, intellectual risk taking, and communicating
- Create an innovative product based on their findings
- Ask questions and explore theories
- Have opportunities to generate new ideas
- Use research methods to investigate animals and analyze their needs
- Gain awareness of animal characteristics and various ways to classify animals

Phase I. Learning Experiences

1. Read a book to introduce the animal unit. Possible books include *What Do You Do With a Tail Like This?* by Steve Jenkins and Robin Page, *Animals Should Definitely Not Wear Clothing* by Judy Barrett, or *Animals in Winter* by Henrietta Bancroft.
2. Conduct a class survey to determine the students' favorite animals. Show the results in a chart or graph.

3. Have students list several animals, or use the animals that came up in the survey. Make available a number of illustrated books and magazines about animals. Students should identify pictures of the animals listed/discussed in small groups or individually. As a large group, discuss characteristics of the animals:
 - What type of animal is it (e.g., reptile, mammal, amphibian)?
 - Describe the animal's natural habitat.
 - What does the animal eat?
 - How does the animal get around (e.g., fly, walk)?

Discuss characteristics as ways to identify and classify animals. Use these characteristics to classify the animals previously listed. (Some classifications can include size, body coverings, habitat, what they eat, and their relationships to humans.)

4. Discuss the basic needs of any living thing and how they can be met. You can start with people and move to pets before covering less familiar animals. In small groups, students will study an animal. They can choose the animal, or you can assign it. Ask the small groups to describe their animal's characteristics and list their animal's basic needs and how they are met.
5. (Optional) Culture some brine shrimp in the classroom. Make up several batches with different salinities in the water. This experiment could be expanded to include other variables such as light and temperature variations. Record your observations:
 - How many hatch?
 - What are the differences in the shrimp's level of activity?
 - How big do they get?
 - How long do they live?

Phase II. Independent Research

A. Research process

1. Selecting a topic. Each student will choose an animal to research.
2. Asking guiding questions. Once students have selected an animal, each student should think of three to five guiding questions, such as:
 - What are the animal's survival needs?
 - What are the animal's strengths and weaknesses?
 - What could happen to the animal if their needs are not met?
3. Creating a research proposal. You can use the attached worksheet as a study aid. Each student should carry out a scientific research process:
 - Identify the animal he/she will study
 - List the guiding questions he/she will investigate
 - Describe his/her hypotheses to the guiding questions
 - Discuss the steps in the research process he/she will use to find out the answers to the guiding questions
4. Conducting the research. Students will use books and the Internet to gather information needed on their animals. Students will need to take notes on their findings in order to create their animal report.

5. Sharing findings. As part of their research, students can create a Who Am I? game to show what they have learned about the animals they studied. Provide students with ten note cards apiece and have them write ten facts about their animals. Students can present their games to the class or to small groups. Encourage other students to guess the animal based on the facts.

Students may wish to incorporate answers to these questions in their Who Am I? game or in their final product:

- Where does your animal live?
- What does your animal eat?
- What is unique about your animal?
- How does your animal look?
- Does your animal depend on other animals? What are threats to your animal?
- What noises does your animal make?
- How would the world be different if your animal didn't exist?

B. The product

Each student will create an animal report that answers questions, such as what are the animal's strengths and where will it live in the future. Included in the report will be a drawing of their animal, its strengths, habitat, how its needs are met, and their prediction of what will happen to the animal in the future.

C. Communication

Each student will present to the class what he/she has learned, as well as the completed animal report. The audience should be given time for questions and answers. The Q&A session should be impromptu and unscripted in order to reflect student learning accurately.

D. A completed project consists of:

1. Research proposal
2. Research log, note cards, and/or resource process sheets
3. The animal report, including references or works cited
4. Videotape or audiotape of the class presentation, including the Q&A session

Resources:

<http://www.switcheroozoo.com/animallist.htm>

<http://paws.wcu.edu/JC16391/unitplan.html>

<http://www.bbc.co.uk/nature/reallywild/>

<http://www.kiddyhouse.com/Farm/>

http://www.nationalgeographic.com/kids/creature_feature/archive/

<http://www.epa.gov/kids/plants.htm>

<http://www.nwf.org/kidZone/kzPage.cfm?siteID=3&departmentId=107&articleId=185>

THECB College Readiness Standards

This unit may address the following THECB College Readiness Standards:

English Language Arts:

I.A.2 Generates ideas and gathers information relevant to the topic and purpose, keeping careful

- records of outside sources
- III.A.2 Adjusts presentation (delivery, vocabulary, length) to particular audiences and purposes
- IV.A.2 Interprets a speaker's message; identify the position taken and the evidence in support of that position
- IV.A.3 Uses a variety of strategies to enhance listening comprehension
- IV.B.1 Listens critically and responds appropriately to presentations
- IV.B.2 Listens actively and effectively in one-on-one communication situations
- IV.B.3 Listens actively and effectively in group discussions
- V.A.1 Formulates research questions
- V.A.2 Explores a research topic
- V.B.1 Gathers relevant sources
- V.B.3 Synthesizes and organizes information effectively
- V.C.1 Designs and presents an effective product

Mathematics:

- VI.B.2 Selects and applies appropriate visual representations of data
- VI.B.4 Describes patterns and departure from patterns in a set of data
- VIII.A.1 Analyzes given information
- VIII.B.1 Develops and evaluates convincing arguments
- VIII.B.2 Uses various types of reasoning
- VIII.C.3 Evaluates the problem solving process

Science:

- I.A.1 Utilizes skepticism, logic, and professional ethics in science
- I.A.2 Uses creativity and insight to recognize and describe patterns in natural phenomena
- I.A.3 Formulates appropriate questions to test understanding of natural phenomena
- I.A.4 Relies on reproducible observations of empirical evidence when constructing, analyzing, and evaluating explanations of natural events and processes
- I.B.1 Designs and conducts scientific investigations in which hypotheses are formulated and tested
- I.C.1 Collaborates on joint projects
- I.E.1 Uses several modes of expression to describe or characterize natural patterns and phenomena. These modes of expression include narrative, numerical, graphical, pictorial, symbolic, and kinesthetic
- I.E.2 Uses essential vocabulary of the discipline being studied
- III.B.1 Reads technical and scientific articles to gain understanding of interpretations, apparatuses, techniques or procedures, and data
- III.B.2 Sets up apparatuses, carries out procedures, and collects specified data from a given set of appropriate instructions
- III.B.3 Recognizes scientific and technical vocabulary in the field of study and use this vocabulary to enhance clarity of communication
- III.B.4 Lists, uses, and gives examples of specific strategies before, during, and after reading to improve comprehension
- III.C.1 Prepares and represents scientific/technical information in appropriate formats for various audiences
- III.D.1 Uses search engines, databases, and other digital electronic tools effectively to locate information
- III.D.2 Evaluates quality, accuracy, completeness, reliability, and currency of information from any source
- V.C.1 Recognizes patterns of change
- V.D.1 Understands that scientists categorize things according to similarities and differences

- VI.C.1 Knows multiple categories of evidence for evolutionary change and how this evidence is used to infer evolutionary relationships among organisms
- VI.C.2 Recognizes variations in population sizes, including extinction, and describe mechanisms and conditions that produce these variations

Social Studies:

- I.B.2 Identifies and evaluates sources and patterns of change and continuity across time and place
- I.F.1 Uses a variety of research and analytical tools to explore questions or issues thoroughly and fairly
- IV.A.1 Identifies and analyzes the main idea(s) and point(s) of view in sources
- IV.A.2 Situates an informational source in its appropriate contexts
- IV.A.3 Evaluates sources from multiple perspectives
- IV.A.4 Understands the differences between a primary and secondary source and uses each appropriately to conduct research and construct arguments
- IV.A.5 Reads narrative texts critically
- IV.A.6 Reads research data critically
- IV.B.1 Uses established research methodologies
- IV.B.3 Gathers, organizes, and displays the results of data and research
- IV.B.4 Identifies and collects sources
- IV.C.1 Understands/interprets presentations critically
- IV.D.1 Constructs a thesis that is supported by evidence
- V.A.1 Uses appropriate oral communication techniques, depending on the context or nature of the interaction
- V.A.2 Uses conventions of standard written English

Cross-Disciplinary Standards:

- I.A.1 Engages in scholarly inquiry and dialogue
- I.B.2 Constructs well-reasoned arguments to explain phenomena, validate conjectures, or support positions
- I.B.3 Gathers evidence to support arguments, findings, or lines of reasoning
- I.B.4 Supports or modifies claims based on the results of an inquiry
- I.C.1 Analyzes a situation to identify a problem to be solved
- I.C.2 Develops and applies multiple strategies to solving a problem
- I.C.3 Collects evidence and data systematically and directly relate to solving a problem
- I.D.1 Self-monitors learning needs and seeks assistance when needed
- I.D.2 Uses study habits necessary to manage academic pursuits and requirements
- I.D.3 Strives for accuracy and precision
- I.D.4 Perseveres to complete and master tasks
- I.E.1 Works independently
- I.E.2 Works collaboratively
- II.A.1 Uses effective prereading strategies
- II.A.3 Identifies the intended purpose and audience of the text
- II.A.4 Identifies the key information and supporting details
- II.A.5 Analyzes textual information critically
- II.A.6 Annotates, summarize, paraphrase, and outline texts when appropriate
- II.A.7 Adapts reading strategies according to structure of texts
- II.A.8 Connects reading to historical and current events and personal interest
- II.B.1 Writes clearly and coherently, using standard writing conventions
- II.B.2 Writes in a variety of forms for various audiences and purposes
- II.B.3 Composes and revises drafts
- II.C.1 Understands which topics or questions are to be investigated

- II.C.2 Explores a research topic
- II.C.3 Refines research topic based on preliminary research and devises a timeline for completing work
- II.C.4 Evaluates the validity and reliability of sources
- II.C.5 Synthesizes and organizes information effectively
- II.C.6 Designs and presents an effective product
- II.C.7 Integrates source material
- II.C.8 Presents final product
- II.D.1 Identifies patterns or departures from patterns among data
- II.D.2 Uses statistical and probabilistic skills necessary for planning an investigation, and collecting, analyzing, and interpreting data
- II.D.3 Presents analyzed data and communicate findings in a variety of formats
- II.E.1 Uses technology to gather information
- II.E.2 Uses technology to organize, manage, and analyze information
- II.E.3 Uses technology to communicate and display findings in a clear and coherent manner
- II.E.4 Uses technology appropriately

ANIMAL NATION

I. What animal are you interested in studying?

II. What would you like to know about the animal? What do you think the answers to the questions are?

| Questions | Hypotheses |
|-----------|------------|
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| | |
| | |

III. How will you find the answers to your questions?

Step 1.

Step 2.

Step 3.

Step 4.

Step 5.
