



## TEXAS PERFORMANCE STANDARDS PROJECT

### Kindergarten Science

#### *Weather to the Extreme*

This guide links the *Weather to the Extreme* unit to the Texas Essential Knowledge and Skills (TEKS) for kindergarteners. *Weather to the Extreme* is a science unit that allows students to study extreme weather and natural disasters along with more typical weather patterns. *Weather to the Extreme* also has interdisciplinary connections to English Language Arts and Social Studies disciplines. For example, students will compose original texts, as outlined in the English Language Arts TEKS, and understand physical and human characteristics of the environment, as described in the Social Studies TEKS. The following document includes the applicable TEKS and the details of the *Weather to the Extreme* 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**

The unit may address the following TEKS:

#### English Language Arts:

- K.1 Understands how English is written and printed
- K.2 Displays phonological awareness
- K.4 Comprehends a variety of texts drawing on useful strategies as needed
- K.6 Analyzes, makes inferences, and draws conclusions about theme and genre in different cultural, historical, and contemporary contexts and provides evidence from the text to support their understanding
- K.9 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
- K.10 Analyzes, makes inferences, and draws conclusions about expository text and provides evidence from text to support their understanding
- K.13 Uses elements of the writing process (planning, drafting, revising, editing, and publishing) to compose text
- K.14 Writes literary texts to express their ideas and feelings about real or imagined people, events, and ideas
- K.16 Understands the function and uses of the conventions of academic language when speaking and writing
- K.17 Writes legibly and use appropriate capitalization and punctuation conventions in their compositions
- K.18 Spells correctly
- K.19 Asks open-ended research questions and develops a plan for answering them
- K.21 Uses comprehension skills to listen attentively to others in formal and informal settings
- K.22 Speaks clearly and to the point, using the conventions of language

### Mathematics:

- K.1 Uses numbers to name quantities
- K.2 Describes order of events or objects
- K.5 Identifies, extends, and creates patterns
- K.11 Uses time to describe, compare, and order events and situations
- K.12 Constructs and uses graphs of real objects or pictures to answer questions
- K.13 Applies Kindergarten mathematics to solve problems connected to everyday experiences and activities in and outside of school
- K.14 Communicates about Kindergarten mathematics using informal language

### Science:

- K.1 Participates in classroom and field investigations, following home and school safety procedures
- K.2 Develops abilities necessary to do scientific inquiry in the field and the classroom
- K.3 Knows that information and critical thinking are used in making decisions
- K.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
- K.5 Knows that organisms, objects, and events have properties and patterns
- K.7 Knows that many types of changes occur

### Social Studies:

- K.3 Understands the concept of chronology
- K.5 Understands the physical and human characteristics of the environment
- K.15 Applies critical-thinking skills to organize and use information acquired from a variety of sources, including electronic technology
- K.16 Communicates in oral and visual forms
- K.17 Uses problem-solving and decision-making skills, working independently and with others, in a variety of settings

### **Description of Unit**

In this task, students will explore seasonal weather changes, as well as extreme weather and natural disasters. Students will examine weather patterns and use charts and instruments to track changes over time. They will compare and contrast different kinds of weather and the different seasons. Their learning will culminate in a “weather report” in which they predict what the weather will be like in the near future.

### **Goals**

Students will meet these goals in their explorations:

- Become familiar with weather patterns in different parts of the world
- Gain awareness of some severe weather characteristics and how to prepare for such an event
- Ask questions and explore theories
- Have opportunities to generate new ideas
- Develop the essential skills of communicating, creative problem solving, and logical thinking
- Understand the potential effect of a severe weather event on a community

### **Phase I. Learning Experiences**

1. Read a book to introduce the weather unit. Possible books include *Oh Say Can You Say What's the Weather Today?* by Tish Rabe and provide students with note cards so that they can make sketches to remember important facts or events.

2. Discuss different kinds of weather and seasonal patterns. Ask students to describe the weather in various seasons. You may wish to have students create murals of the four seasons in cooperative groups.
3. Create a weather chart to track the weather over a period of time. Students can create a classroom graph with the number of sunny, cloudy, and rainy days. Set a thermometer outside of the classroom and have students (individually or in pairs) record the temperature each day. You may also wish to set up cups or beakers for measuring rainfall. One possible resource for introducing the concept of tracking weather is *The Kid's Book of Weather Forecasting: Build a Weather Station, "Read the Sky," & Make Predictions!* by Mark Breen and Kathleen Friestad.
4. Take a field trip or invite in a guest speaker, such as a meteorologist or a weather chaser from the local news station, to learn about seasonal weather patterns and extreme weather.
5. Discuss different natural disasters. Consider the following questions:
  - What causes each type of weather phenomenon?
  - What should you do if you know from a weather report that this phenomenon is on its way?
  - Since some kinds of weather phenomenon are specific to certain parts of the earth or terrains, where might you need to be concerned about a hurricane, tornado, blizzard, flood, or dust storm?

Each student should choose a natural disaster and illustrate it. Talk about how natural disasters might affect the local community, families of the people in the community, and each person individually. How can you prepare for a natural disaster that might occur in your area?

## **Phase II. Independent Research**

### **A. Research process**

1. Selecting a topic. Form small groups based on interest in exploring a specific weather phenomenon (e.g., thunderstorms, tornados, hurricanes).
2. Asking guiding questions. Each group creates a KWL chart. Encourage the student to include questions like, "Does this phenomenon occur at a particular time of year? In a particular season? In a particular geographic area? What conditions (temperature, barometric pressure) must exist for the phenomenon to occur? How can this phenomenon be predicted? What safety precautions need to be taken?"
3. Creating a research proposal. Brainstorm with students how to find the answers to the questions in their *W* column.
4. Conducting the research. Collaborate with the librarian to provide books and/or websites with visuals that students can access with help. View local weather reports to help students analyze the kinds of information and visuals the meteorologist uses. Revisit the KWL chart near the end of the unit to reflect on student learning.
5. Sharing findings. Each student takes a different role in the production of the weather report (e.g., script writer, graphic design, producer, meteorologist).

### **B. The product**

Each group develops a weather report and delivers it as a meteorologist would. The report should include illustrations of the local weather. Students can use patterns to predict when

their phenomenon might come (i.e., how do we know the phenomenon is likely to occur?) and can also offer ways to prepare for it.

### **C. Communication**

Each group presents the weather report to classmates using appropriate vocabulary. The group should take questions or comments at the end of the report. The Q&A session should be impromptu and unscripted in order to reflect student learning accurately.

### **D. A completed project consists of:**

1. KWL chart
2. Notes for weather report
3. Weather report
4. Videotape or audiotape of the weather report, including the Q&A session

### **Internet Resources**

[http://www.illiniweather.com/pages/kids\\_weather\\_links.htm](http://www.illiniweather.com/pages/kids_weather_links.htm).

(this site contains links to many other web resources for students)

<http://www.weather.gov/om/reachout/kidspage.shtml>

<http://www.scholastic.com/kids/weather/>

<http://library.thinkquest.org/3805/>

### **THECB College Readiness Standards**

This unit may address the following THECB College Readiness Standards:

#### English Language Arts:

- IV.A.2 Interprets a speaker's message; identifies 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.2 Listens actively and effectively in one-on-one communication situations
- IV.B.3 Listens actively and effectively in group discussions

#### Social Studies:

- I.A.2 Analyzes the interaction between human communities and the environment
- IV.A.1 Identifies and analyzes the main idea(s) and point(s) of view in sources
- IV.C.1 Understands/interprets presentations critically

#### Cross-Disciplinary Standards:

- I.E.1 Works independently
- I.E.2 Works collaboratively
- II.C.2 Explores a research topic