



## Science Grade 07 Unit 04 Exemplar Lesson 02: Weathering, Erosion, and Deposition in Texas

This lesson is one approach to teaching the State Standards associated with this unit. Districts are encouraged to customize this lesson by supplementing with district-approved resources, materials, and activities to best meet the needs of learners. The duration for this lesson is only a recommendation, and districts may modify the time frame to meet students' needs. To better understand how your district may be implementing CSCOPE lessons, please contact your child's teacher. (For your convenience, please find linked the TEA Commissioner's List of [State Board of Education Approved Instructional Resources](#) and [Midcycle State Adopted Instructional Materials](#).)

### Lesson Synopsis

During this lesson, students will analyze the effects of weathering, erosion, and deposition on the environment in the ecoregions of Texas. After this unit, in Grade 8, students will interpret topographic maps and satellite views to identify land and erosional features and predict how these features may be reshaped by weathering.

### TEKS

The Texas Essential Knowledge and Skills (TEKS) listed below are the standards adopted by the State Board of Education, which are required by Texas law. Any standard that has a strike-through (e.g. ~~sample phrase~~) indicates that portion of the standard is taught in a previous or subsequent unit. The TEKS are available on the Texas Education Agency website at <http://www.tea.state.tx.us/index2.aspx?id=6148>.

**7.8** *Earth and space. The student knows that natural events and human activity can impact Earth systems. The student is expected to:*

**7.8B** Analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas.

### Scientific Process TEKS

**7.1** *Scientific investigation and reasoning. The student, for at least 40% of the instructional time, conducts laboratory and field investigations following safety procedures and environmentally appropriate and ethical practices. The student is expected to:*

**7.1A** Demonstrate safe practices during laboratory and field investigations as outlined in the Texas Safety Standards.

**7.1B** Practice appropriate use and conservation of resources, including disposal, reuse, or recycling of materials.

**7.2** *Scientific investigation and reasoning. The student uses scientific inquiry methods during laboratory and field investigations. The student is expected to:*

**7.2A** Plan and implement comparative and descriptive investigations by making observations, asking well-defined questions, and using appropriate equipment and technology.

**7.2E** Analyze data to formulate reasonable explanations, communicate valid conclusions supported by the data, and predict trends.

**7.3** *Scientific investigation and reasoning. The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions and knows the contributions of relevant scientists. The student is expected to:*

**7.3C** Identify advantages and limitations of models such as size, scale, properties, and materials.

**7.4** *Scientific investigation and reasoning. The student knows how to use a variety of tools and safety equipment to conduct science inquiry. The student is expected to:*

**7.4A** Use appropriate tools to collect, record, and analyze information, including ~~life science models~~, hand lens, ~~stereoscopes~~, ~~microscopes~~, beakers, Petri dishes, ~~microscope slides~~, graduated cylinders, test tubes, ~~meter sticks~~, ~~metric rulers~~, ~~metric tape measures~~, timing devices, ~~hot plates~~, ~~balances~~, ~~thermometers~~, ~~calculators~~, water test kits, computers, ~~temperature and pH probes~~, ~~collecting nets~~, ~~insect traps~~, ~~globes~~, digital cameras, journals/notebooks, and other equipment as needed to

teach the curriculum.

## GETTING READY FOR INSTRUCTION

### Performance Indicators

#### Grade 07 Science Unit 04 PI 02

Create a pamphlet analyzing the effects of weathering, erosion, and deposition on the environments in an ecoregion of Texas.

Standard(s): 7.2E , 7.8B

ELPS ELPS.c.1C , ELPS.c.5B

### Key Understandings

- Weathering, erosion, and deposition are processes that work together to reshape the surface of the Earth.
  - What is the difference between weathering, erosion, and deposition?
  - How is an ecoregion different from an environment or ecosystem?

### Vocabulary of Instruction











- ecoregion
- weathering
- erosion
- deposition
- processes
- reshaping
- environment
- oxidation
- ice wedging
- thermal expansion
- carbonation
- biotic
- thermal expansion
- unloading (uplifting)
- exfoliation
- chemical weathering
- mechanical weathering

### Materials

- aluminum roasting pans
- beaker (50–100 ML, filled with water, 1 at Station 4)
- colored pencils or markers (per group)
- construction paper (black, 1 sheet, at Station 2)
- construction paper (white 1 sheet at Station 2)
- discard container (5 gallon bucket for wet gravel sand mixture, 1 at Station 4)
- file folder (1 at Station 3)
- hand brush or hand broom (1 at Station 3)
- hand lens (1 per student)
- limestone, sandstone, or granite (2 pieces of the same kind or rock, large enough to grind together, at Station 2)
- paper (various types for pamphlets, per student)
- paper cup (with holes punched in bottom, 1 at Station 4)
- paper towels (1 per group, at Station 1)
- pea gravel
- petri dish (1 at Station 1)
- pieces of limestone (1 per group at Station 1)
- pipette or eyedropper (1 at Station 1)
- safety goggles (1 per student per group at each station)
- sample pamphlets or brochures (see Advance Preparation, 1–2 per group)
- sand
- small beaker (50–100 mL, 1 per station)
- stones (large, 3 or 4 at Station 3)
- straw (1 per group at Station 3)
- tape or glue (per group)
- Texas highway map (1 map per group)
- timer (1 at Station 3)
- vinegar (16 oz. at Station 1)
- water (for rinsing limestone at Station 1)

### Attachments

All attachments associated with this lesson are referenced in the body of the lesson. Due to considerations for grading or student assessment, attachments that are connected with Performance Indicators or serve as answer keys are available in the district site and are not accessible on the public website.

-  [Handout: Ecoregions of Texas Map \(1 per student\)](#)
-  [Teacher Resource: WED Station Cards \(see Advance Preparation, 1 set\)](#)
-  [Handout: Weathering Notes \(1 per student\)](#)
-  [Teacher Resource: Weathering Notes KEY](#)
-  [Teacher Resource: PowerPoint: Weathering](#)
-  [Handout: Erosion and Deposition Notes \(1 per student\)](#)
-  [Teacher Resource: Erosion and Deposition Notes KEY](#)
-  [Teacher Resource: PowerPoint: Erosion and Deposition](#)
-  [Teacher Resource: PowerPoint: Ecoregions of Texas \(see Adv. Prep. for copies for student reference\)](#)
-  [Teacher Resource: Performance Indicator Instructions KEY \(1 for projection\)](#)

## Resources

None Identified

## Advance Preparation

1. Prior to Day 1, obtain maps of Texas. One resource is the Texas Department of Transportation (TXDOT). Write a request on school letterhead requesting a class set (1 per group) of maps. These maps are available for no charge. If there is a local tourist bureau nearby, you may be able to pick up five or six maps for use in group work. You will need a Texas Highway map per group of students.
2. Prior to Day 1, print one copy of the Teacher Resource: **WED Station Cards** and laminate them.
3. Prior to Day 1, gather and set up materials for WED investigation stations ahead of time (See the Teacher Resource: **WED Station Cards**). If you have a large class, you may wish to create duplicates of the four stations.
4. Prior to Day 4, obtain sample pamphlets or brochures from a local travel agency. These will be used as samples for the Performance Indicator.
5. Prior to Day 4, make a copy of each ecoregion note page from the **Ecoregions of Texas** PowerPoint for students to use as a reference for the Performance Indicator. Give students the corresponding page that fits the ecoregion they have selected for their pamphlets. You will need enough copies for each student to have the page they have chosen.
6. Prepare attachment(s) as necessary.

## Background Information

During Lesson 01 of this unit, students learned that catastrophic events of weather systems, such as hurricanes, floods, and tornadoes, shaped and restructured the environment through force and motion. During the current lesson, students will analyze the effects of weathering, erosion, and deposition on the environment in the ecoregions of Texas.




An ecoregion is simply an area of land with identifiable climate patterns, vegetation, physical features, and other factors that affect the environment and habitat diversity. Studying the ecoregions of Texas also allows students to gain knowledge about how we adapt to our environment and modify our environment to lessen the negative impact of catastrophic events. The various ecoregions will encompass both similar and different ways in which nature (animal, plant, geologic, and precipitation) and humans have shaped the Texas that we know today.


STAAR Note:

Although not identified as a Supporting Standard, student expectation 7.8B builds content in the area of analyzing how the forces of the atmosphere affect the physical landscape in different ecoregions.

## INSTRUCTIONAL PROCEDURES

Instructional Procedures ENGAGE – Major Cities	Notes for Teacher NOTE: 1 Day = 50 minutes
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	Suggested Day 1
<ol style="list-style-type: none"> <li>1. Divide the class into groups. Distribute a copy of the Handout: <b>Ecoregions of Texas Map</b> to each student and a copy of a Texas State Highway maps. Note: The marine environment listed on the TEA State Training <i>Science Academies: Grades 5 – 8</i>, “Texas Our Texas”: is not included in the map.</li> <li>2. Allow students a few moments to compare the two maps. Encourage students to look for similarities and differences in the maps.</li> <li>3. Ask/Say: <ul style="list-style-type: none"> <li>• <b>What is an ecoregion? Accept all answers at this time.</b></li> <li>• <b>Think about the term “ecoregion”. What do the terms ecological and region imply? Accept all answers at this time.</b></li> </ul> </li> <li>4. Work with students to develop a definition for the term ecoregion. Post student suggestions on the board, and guide students toward a definition that includes the following concepts: <ul style="list-style-type: none"> <li>• <b>An ecoregion is an area of land with identifiable climate patterns, vegetation, physical features, and other factors that affect the environment and habitat diversity.</b></li> </ul> </li> <li>5. Say: <ul style="list-style-type: none"> <li>• <b>To help us understand the area of the state each ecoregion occupies, work with your group to do the following:</b> <ul style="list-style-type: none"> <li>• <b>Locate the largest city in the ecoregion where we live.</b></li> <li>• <b>Place a dot on the Ecoregion of Texas Map handout in the approximate location of the city.</b></li> <li>• <b>Label the dot with the name of the city.</b></li> <li>• <b>Divide the remaining regions among the members of your group.</b></li> <li>• <b>Repeat the process for identifying cities for the remaining 10 ecoregions listed on the map.</b></li> </ul> </li> </ul> </li> <li>6. Point out to students that the ecoregions of Texas also include the marine environments of the gulf coast, and ask students to identify the ecoregion on the handout.</li> <li>7. Ask students to record the class-developed definition of an ecoregion in their notebooks and affix the ecoregion handout in the notebook as well.</li> </ol>	<p> <b>Materials:</b></p> <ul style="list-style-type: none"> <li>• Texas highway map (1 map per group)</li> </ul> <p><b>Attachments:</b></p> <ul style="list-style-type: none"> <li>• Handout: <b>Ecoregions of Texas Map</b> (1 per student)</li> </ul> <p><b>Instructional Notes:</b> Some sources differ on the identification of ecoregions in Texas. For example, the marine environment listed on the TEA State Training <i>Science Academies: Grades 5 – 8</i>, “Texas Our Texas” is not included in the handout, but should be included in the discussion of ecoregions.</p> <p> <b>STAAR Notes:</b> The Texas Education Agency has provided a training that includes lessons for 7.8B. The training is available through your local Education Service Center. It is entitled, <i>Science Academies: Grades 5 – 8</i>, “Texas Our Texas”.</p> <p> <b>Science Notebooks:</b> Students need to record the definition of an ecoregion and affix ecoregion map in their notebooks.</p>

EXPLORE I – WED Investigations	Suggested Days 1 (continued) and 2
<ol style="list-style-type: none"> <li>1. Inform students that, for the next couple of days, the class will investigate the effects of weathering, erosion, and deposition on the shape of the Earth in a station investigation.</li> <li>2. Divide the class into groups for the four stations. If you have a large class, you may wish to create duplicate stations. Ask students to prepare a section in their notebooks to record their observations for each station.</li> <li>3. Review station procedures and safety precautions with students including the safe handling of vinegar and blowing sand gently, as not to scatter it around the room and possibly get it into someone’s eyes. Remind students they will also need to wear safety goggles throughout the stations.</li> <li>4. Discuss the following clean-up procedures for each station with students. Include information on the disposal and cleanup of each station before rotation to a new station:</li> </ol>	<p> <b>Materials:</b></p> <ul style="list-style-type: none"> <li>• safety goggles (1 per student per group at each station)</li> <li>• petri dish (1 at Station 1)</li> <li>• small beaker (50–100 mL, 1 per station)</li> <li>• pipette or eyedropper (1 at Station 1)</li> <li>• vinegar (16 oz. at Station 1)</li> <li>• pieces of limestone (1 per group at Station 1)</li> <li>• hand lens (2–3 per group at Station 1)</li> <li>• water (for rinsing limestone at Station 1)</li> <li>• paper towels (1 per group, at Station 1)</li> <li>• limestone, sandstone, or granite (2 pieces of the same kind or rock, large enough to grind together, at Station 2)</li> </ul>

- **Station 1** – Rinse and dry the dish and limestone rock. Place the used rock aside. The next group uses an unused rock.
  - **Station 2** – Leave rock and ground sediments at the station. Each group can add to the pile of sediment. Instruct each group to grind a portion of the rock that hasn't been ground together yet.
  - **Station 3** – Pile sand and gravel back to the beginning end of the pan. Remove the large rocks so each group may place their own. Discard straw after use.
  - **Station 4** – Dump sand, gravel, and water into the discard container. Do not pour down the sink because sand and gravel left behind in the water may clog the drain.
5. Allow about 10–15 minutes at each station for students to conduct the investigation and write descriptive observations.
  6. Monitor station rotations, and assist groups as needed.
  7. Ensure that students are recording their information accurately in science notebooks.
  8. At the end of class, instruct students to reflect in their science notebooks about their investigation experiences. You may need to give students a science sentence starter or sentence frame to assist students to beginning their reflections.
  9. One example would be:
    - **I learned/discovered/heard that.....**
  10. Remind students to use appropriate science vocabulary in their writing.

- construction paper (black, 1 sheet, at Station 2)
- construction paper (white 1 sheet at Station 2)
- hand lens (1 per student, at Station 2)
- aluminum roasting pan (disposable, 1 at Station 3)
- file folder (1 at Station 3)
- tape (1 roll, at Station 3)
- straw (1 per group at Station 3)
- sand (1 small bag at Station 3)
- stones (large, 3 or 4 at Station 3)
- pea gravel (handful at Station 3)
- timer (1 at Station 3)
- hand brush or hand broom (1 at Station 3)
- aluminum roasting pan (disposable, 1 at Station 4)
- sand (1 small bag per group at Station 4)
- pea gravel (handful at Station 4)
- paper cup (with holes punched in bottom, 1 at Station 4)
- beaker (50–100 ML, filled with water, 1 at Station 4)
- discard container (5 gallon bucket for wet gravel sand mixture, 1 at Station 4)

**Attachments:**

- Teacher Resource: **WED Station Cards** (see Advance Preparation, 1 set)



**Safety Note:**

Students should wear safety goggles throughout the station investigation.

**Instructional Notes:**

If you have a large class, you may wish to create duplicate stations.

Resources should be conserved whenever possible and practical.

For conservation of resources:

- Sand may be set aside to dry and reused for other activities.
- Gravel can be sifted out of the sand and reused.
- If sand and gravel must be thrown out, dispose of them outdoors.



**Science Notebooks:**

Students should write reflections on station activities in their notebooks.

1. Facilitate a discussion in which students reflect on their results from the previous day's investigation. Ask for volunteers to share what they wrote for the WED questions. Encourage students to revise and add to their responses.

2. Possible answers:

**Station 1**

- a. Small bubbles appeared.
- b. Vinegar would represent acid rain (you may have to discuss this).
- c. Pollution from cars and industry can cause acid rain; water pollution

**Station 2**

- a. Side rubbed together were weathered
- b. Physical weathering of rocks
- c. Removing land cover, quarrying rocks, etc.

**Station 3**

- a. Sand and small gravel pieces
- b. Weathered = the sand and small gravel; eroded = larger rocks
- c. They were deposited (dropped)
- d. Removing vegetation

**Station 4**

- a. Precipitation (rain)
- b. They were deposited (dropped).
- c. Construction of dams, removal of vegetation, building homes in flood plain etc.

3. Say:

- **Through your exploration of weathering, erosion, and deposition, you found that water and wind contribute to the weathering of rock and the movement of water and wind cause erosion. You also found that the force of gravity and temperature play a role in reshaping the landscape around us.**

4. Project the following question:

- **What is the difference between weathering, erosion, and deposition?** *Weathering is the breaking down of rock into smaller pieces that remain next to each other. Weathering forms sediment. There are two types: chemical and mechanical. Erosion is the movement of sediments from one place to another through the action of wind, water, ice (such as glaciers), and gravity. Deposition is the laying down of sediments that were carried in from another location.*

5. Ask students to discuss the question with a partner. After allowing a few moments, instruct students to write a few sentences answering the question above.

6. After allowing students time to write their answers, ask for volunteers to share out with the class. Students can add to the answers as the class works to develop a thorough understanding of the differences.

7. Use this discussion as an opportunity to correct any misconceptions.

**Instructional Notes:**

Today's reflection/prediction activity should only take about 3–5 minutes.

This type of reflection allows students to engage in open-ended questions or prompts posed by the teacher before, during, or after an activity.



**Check For Understanding:**

Use today's discussions as formative assessments of student understanding.



**Science Notebooks:**

Students should write reflections in their notebooks.

**EXPLORE/EXPLAIN II – Agents of Erosion**

**Suggested Days 3 (continued) and 4**

- 1. Distribute the Handout: **Weathering Notes** to each student.
- 2. Display and discuss the Teacher Resource: PowerPoint: **Weathering**. Guide students in using the handout to fill in their own concept map for W, the concepts of weathering.
- 3. Distribute the Handout: **Erosion and Deposition Notes** to each student.
- 4. Display and discuss the Teacher Resource: PowerPoint: **Erosion and**



**Materials:**

- tape or glue (per group)

**Attachments:**

- Deposition.** Guide students in using the handout to fill in their own concept map for W, the concepts of erosion and deposition.
- Display and discuss the Teacher Resource: PowerPoint: **Ecoregions of Texas**. Note: The presentation discusses 11 of the 12 ecoregions mentioned in the TEA state training: *Science Academies: Grades 5 – 8*. You may wish to make note of the 12<sup>th</sup> ecoregion by discussing the marine environment off the Gulf coast.
  - Project the following question:
    - **How is an ecoregion different from an environment or ecosystem?** *An ecoregion is an area defined by its environmental conditions, especially climate, landforms, and soil characteristics. An environment is the air, water, minerals, organisms, and all other external factors surrounding and affecting a given organism at any time. An ecosystem is a biological environment consisting of all of the organisms living in a particular area, as well as all the nonliving, physical components (air, soil, water, and sunlight) with which the organisms interact.*
    - **How can weathering, erosion, and deposition affect an ecoregion?** *Due to differing precipitation rates, soil and rock types, wind, and weather conditions, each ecoregion can be affected by weathering, erosion, and deposition in different ways.*
  - Instruct students to complete a concept map in their science notebooks of the projected questions and answers. Students should use their Weathering, Erosion, and Deposition Notes pages as an aid, as well as the information from the Ecoregions of Texas presentation.
  - Instruct students to share their mind map with a partner and discuss each.
  - Instruct students to add or revise important information from their partner that they may have missed in their mind maps.
  - Monitor to ensure that students are presenting and recording missing information accurately.
  - Students should affix their handouts in the notebooks when the activity is completed.

- Handout: **Weathering Notes** (1 per student)
- Teacher Resource: **Weathering Notes KEY**
- Teacher Resource: PowerPoint: **Weathering**
- Handout: **Erosion and Deposition Notes** (1 per student)
- Teacher Resource: **Erosion and Deposition Notes KEY**
- Teacher Resource: PowerPoint: **Erosion and Deposition**
- Teacher Resource: PowerPoint: **Ecoregions of Texas** (see Adv. Prep. for copies for student reference)




**Misconception:**

- Students may think erosion is the process of weathering.

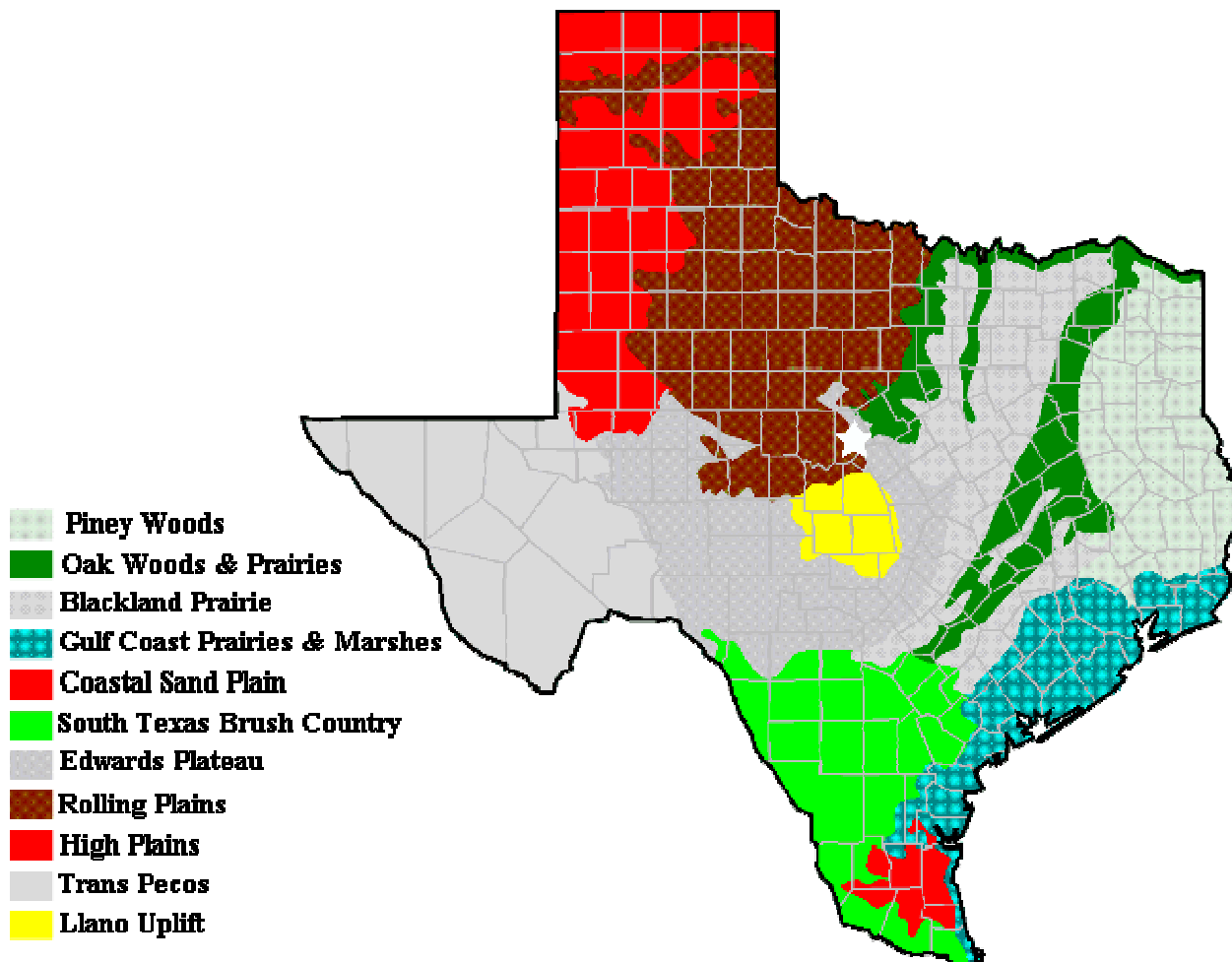


**Science Notebooks:**

Students need to create mind maps and affix handouts in their science notebooks.

<p><b>ELABORATE/EVALUATE – Performance Indicator</b></p>	<p><b>Suggested Days 5 and 6</b></p>
<p><b>Grade 07 Science Unit 04 PI 02</b></p> <p>Create a pamphlet analyzing the effects of weathering, erosion, and deposition on the environments in an ecoregion of Texas.</p> <p>Standard(s): <b>7.2E</b> , <b>7.8B</b></p> <p><b>ELPS</b> <b>ELPS.c.1C</b> , <b>ELPS.c.5B</b></p> <ol style="list-style-type: none"> <li>Refer to the Teacher Resource: <b>Performance Indicator Instructions KEY</b> for information on administering the assessment.</li> </ol>	<p> <b>Materials:</b></p> <ul style="list-style-type: none"> <li>• paper (various types for pamphlets, per student)</li> <li>• sample pamphlets or brochures (see Advance Preparation, 1–2 per group)</li> <li>• colored pencils or markers (per group)</li> </ul> <p><b>Attachments:</b></p> <ul style="list-style-type: none"> <li>• Teacher Resource: PowerPoint: <b>Ecoregions of Texas</b> (see Adv. Prep. for copies for student reference, 1 copy per student)(from previous activity)</li> <li>• Teacher Resource: <b>Performance Indicator Instructions KEY</b> (1 for projection)</li> </ul>

## Ecoregions of Texas





## WED Station Cards

### Station 1 - Chemical Weathering

#### Materials:

- safety goggles
- Petri dish
- small beaker
- pipette or eyedropper
- vinegar
- piece of limestone
- hand lens
- water for rinsing limestone
- paper towel for drying limestone

#### Procedure:

1. Put on your safety goggles.
2. Place the piece of limestone in a Petri dish.
3. Observe the surface of the rock using the hand lens. Record observations in your science notebooks.
4. Use the pipette to remove some vinegar from the beaker. Add 10 drops to the surface of the limestone.
5. Use the hand lens to observe the rock again. Record observations.
6. Rinse and dry the piece of limestone and set aside. Clean up the station, and leave it ready for the next group to use.
7. Write the following questions and your responses in your notebooks:
  - a. What did you observe when you added vinegar to the limestone?
  - b. What would the vinegar represent in nature?
  - c. This type of weathering by a chemical such as vinegar is known as chemical weathering. What human activities may cause or contribute to chemical weathering?

## WED Station Cards

### Station 2 - Physical Weathering

#### Materials:

- safety goggles
- 2 pieces of limestone, sandstone, or granite
- 1 sheet of black construction paper or 1 sheet of white construction paper
- hand lens

#### Procedure:

1. Put on your safety goggles.
2. Place the construction paper sheets side by side.
3. Observe the surface of the rocks using the hand lens. Record observations in your science notebooks.
4. If your two rocks are a dark color, hold them over the white construction paper. If the rocks are a light color, hold them over the black construction paper.
5. Rub two pieces of the same type of rock together vigorously over the construction paper.
6. Use the hand lens to observe the rock again. Record observations.
7. Leave rock and ground sediments at the station in one neat pile. Each group will add to the pile of sediment.
8. Clean up the station, and leave it ready for the next group to use.
9. Write the following questions and your responses in your notebooks:
  - a. What did you observe about the surfaces after the rocks were rubbed together?
  - b. What would the rocks rubbing together represent in nature?
  - c. This type of mechanical action is called physical weathering. What human activities may cause or contribute to physical weathering?

## WED Station Cards

### Station 3 - Wind Erosion and Deposition

#### Materials:

- safety goggles
- aluminum roasting pan (disposable)
- file folder
- tape
- straw
- sand
- 3 or 4 large stones
- handful of pea gravel
- timer
- hand brush

#### Procedure:

1. Put on your safety goggles.
2. Place the narrow end of the aluminum pan facing you. Place sand in the pan until it covers about  $\frac{1}{4}$  of the length of the pan.
3. Open the file folder, and tape it to the empty end of the pan so that will act as a wind screen to stop the blowing sand.
4. Scatter the large stones and gravel on the top of the sand.
5. Use the straw to try to blow rocks to the empty end of the pan. Do this for one minute.
6. Clean up the station, and leave it ready for the next group to use:
  - Pile sand and gravel back to the beginning end of the pan.
  - Remove the large rocks so each group may place their own.
  - Brush up any sand that has blown out on the table.
  - Discard straw after use.
7. Write the following questions and your responses in your notebook:
  - a. Which items moved the easiest with the blowing wind?
  - b. Which rocks represented weathered rock? Which rock represented eroded rocks?
  - c. What happened to the sand and rocks when the wind quit blowing?
  - d. What human activities may cause or contribute to wind erosion and deposition?

## WED Station Cards

### Station 4 - Water Erosion and Deposition

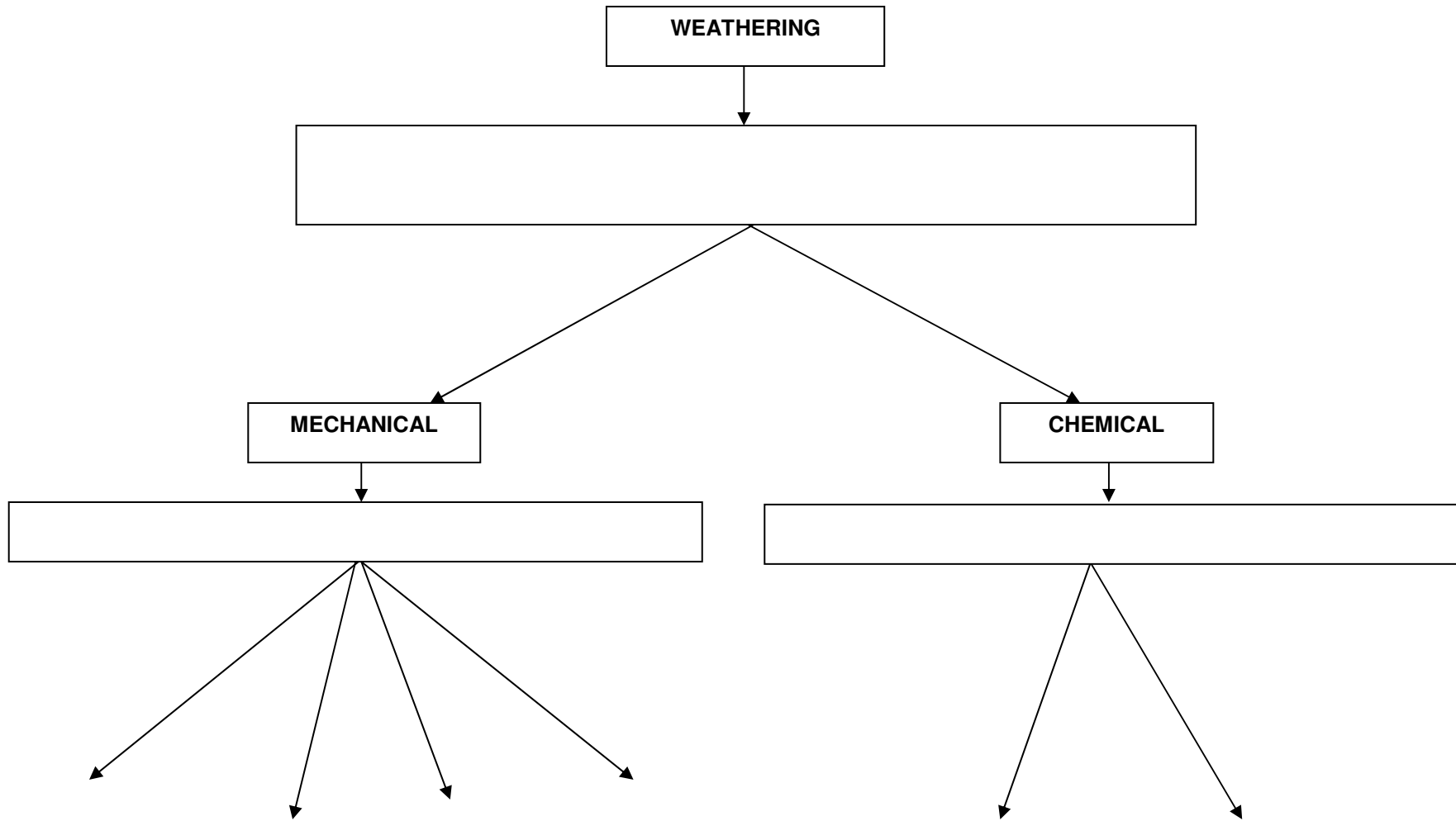
#### Materials:

- safety goggles
- aluminum roasting pan (disposable)
- sand
- handful of pea gravel
- paper cup with holes punched in the bottom
- beaker of water

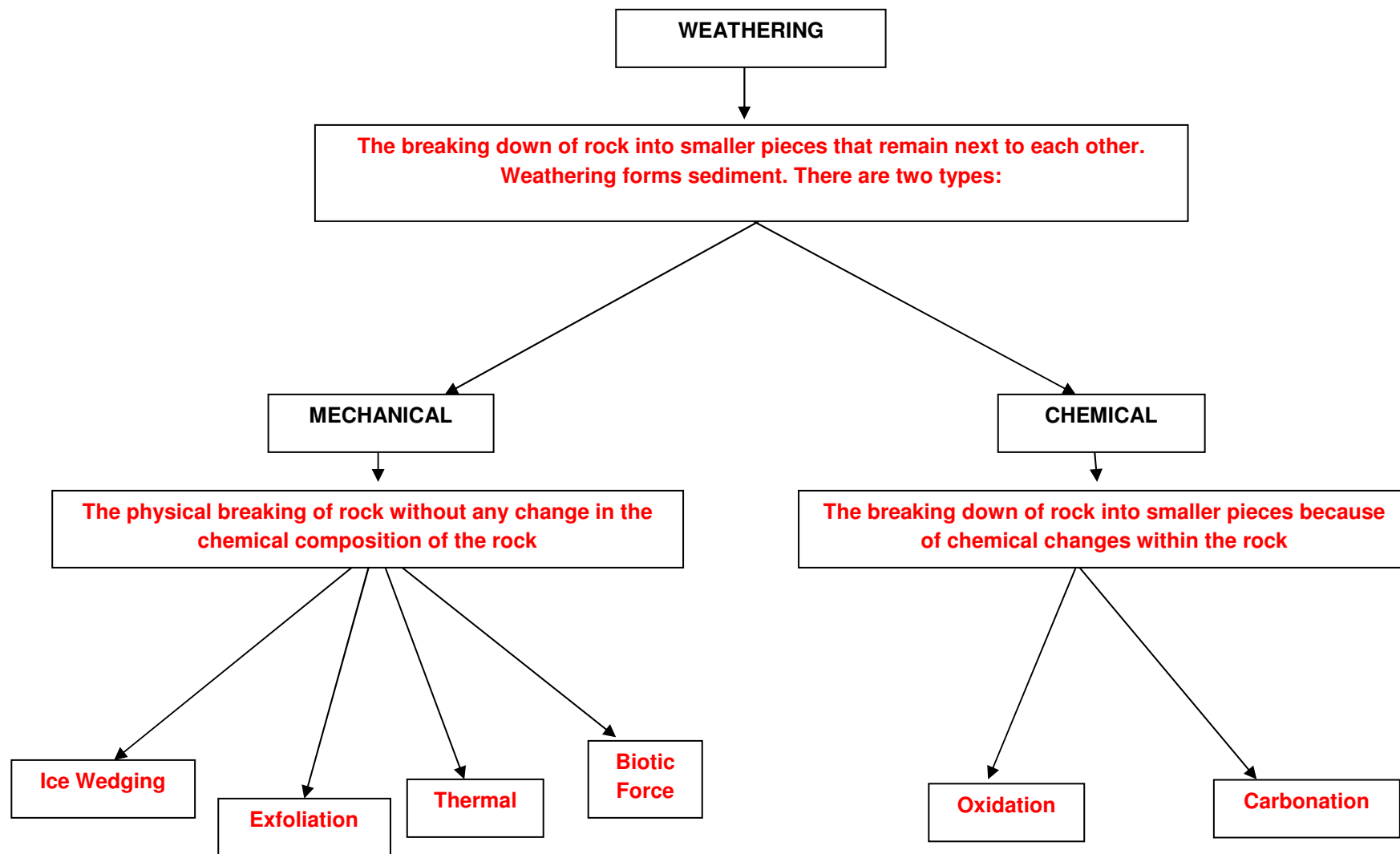
#### Procedure:

1. Put on your safety goggles.
2. Place the narrow end of the aluminum pan facing you. Mix sand and gravel together, and form a hill in the end of the pan.
3. Hold the cup over the hill, and pour water into the cup.
4. Observe and record the results in the science notebooks.
5. Dump sand and gravel and water into the discard container. Do not pour down the sink because sand and gravel left behind in the water may clog the drain.
6. Clean up the station, and leave it ready for the next group to use.
7. Write the following questions and your responses in your notebook:
  - a. What did the water represent in nature?
  - b. What happened to the particles when the water stopped flowing?
  - c. What human activities may cause or contribute to water erosion and deposition?

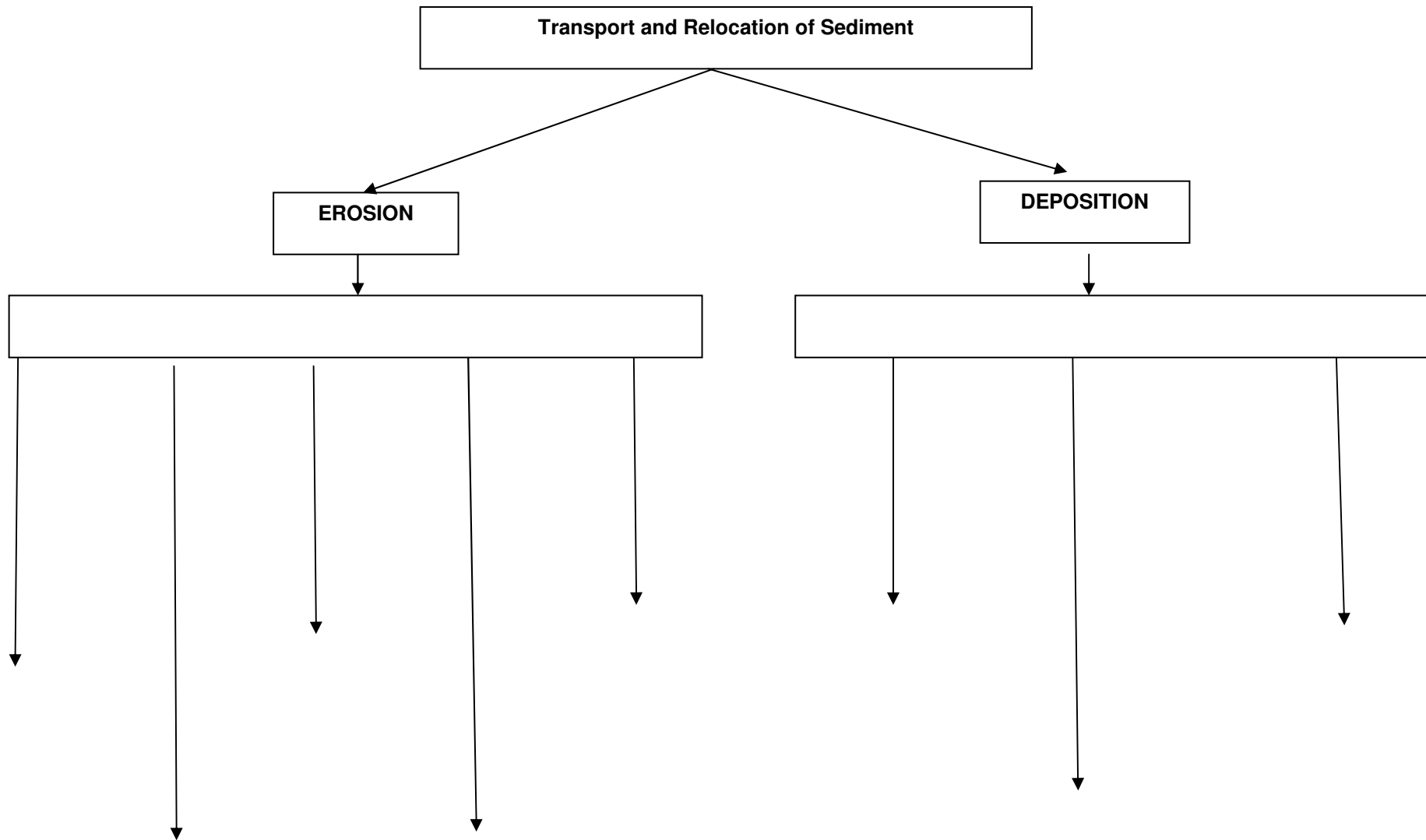
# Weathering Notes



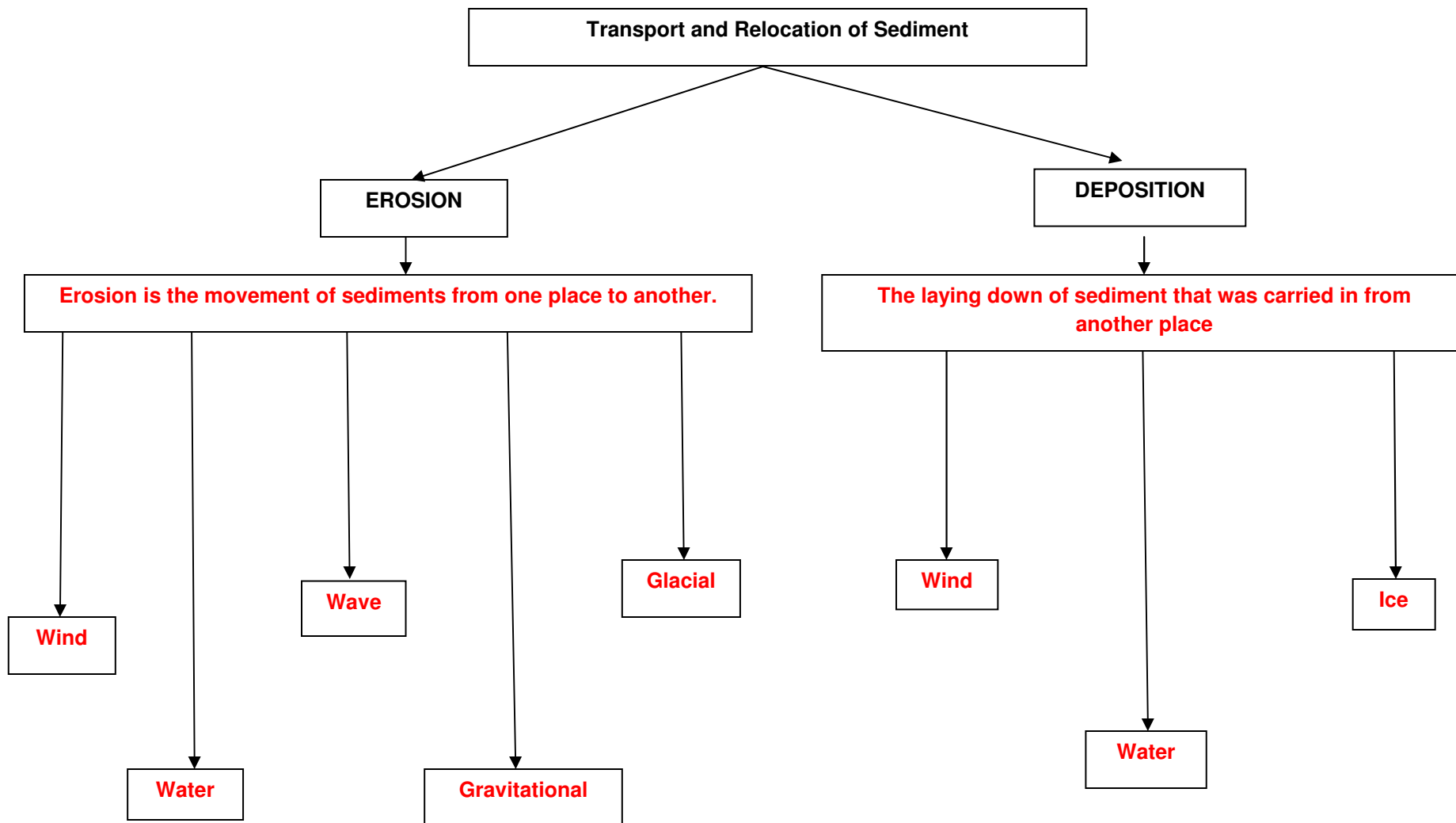
## Weathering Notes **KEY**



# Erosion and Deposition Notes



## Erosion and Deposition Notes **KEY**





## Performance Indicator Instructions **KEY**

### Performance Indicator

- Make a mobile to describe how the different types of catastrophic events impact ecosystems. Create a pamphlet analyzing the effects of weathering, erosion, and deposition on the environments in an ecoregion of Texas.  
(7.2E; 7.8B)  
**ELPS** 1C; 5B

### Materials:

- paper (various types for pamphlets, per student)
- sample pamphlets or brochures (see Advance Preparation, 1–2 per group)
- colored pencils or markers (per group)

### Attachments:

- Teacher Resource: PowerPoint: **Ecoregions of Texas** (see Advance Preparation for copies for student reference, 1 copy per student, from previous activity)

### Instructional Procedures:

1. Project the Performance Indicator on the board.
2. Share the Performance Indicator rubric or your expectations with students prior to students beginning the assessment.
3. Students should describe characteristics for the ecoregion and the effects of weathering, erosion, and deposition on the ecoregion.
  - Examples could be:
    - Average annual precipitation
    - Weather/climate information that could affect WED
    - Average annual temperatures
    - Landforms
    - Soil type prevalent in the ecoregion
    - Native vegetation (could affect erosion)
    - Population centers (could affect acid rain, water pollution levels, etc.)
    - Effects of WED on the environments in the ecoregion based on the above
4. Answer any questions students may have regarding the assessment. Some students may benefit from sentence stems to assist them in describing the effects of weathering, erosion, and deposition on the environments in an ecoregion of Texas.
5. Distribute several sample pamphlets/brochures for students to analyze (see Advance Preparation).

7. Allow students to choose the ecoregion they will use for the Performance Indicator. Ensure that all regions are represented. If you include the 12<sup>th</sup> ecoregion, marine environment, you will need to provide additional research.
8. Distribute a copy of an ecoregion note page from the **Ecoregions of Texas** PowerPoint that fits the ecoregion they selected.
9. Students should refer to their notes pages from the PowerPoint presentations, as well as the **Ecoregions of Texas** PowerPoint note page and their concept maps. Note: All information listed on the concept map should be considered in creating the pamphlets for the ecoregions.
10. Use the second half of Day 6 to allow students to present their pamphlets to their peers.
11. Facilitate a discussion on the effects of WED on the different ecoregions presented.
12. If time is running short, consider dividing the class into groups and having students take turns sharing within their groups.