INTRODUCTION

Defined as a region rendered barren or partially barren by environmental extremes--especially low rainfall, a desert is an integral part of our natural environment and our lives. It is important that we understand the implications of managing the desert and its value to us. Because deserts are often taken for granted or misused, in this session, we will investigate a desert environment and collect information that will tell us about the plants, animals, soils, and climate conditions found on a desert. We'll also examine the human impact on the desert and make inferences about the condition of the desert.

THE ACTIVITIES	TIME REQUIRED
Observe the Desert Environment	25 minutes
Observe Weather Factors	45 minutes
Observe Soil Characteristics	25 minutes
Test Soil Characteristics	45 minutes
Observe Animal Life	75 minutes
Observe Plant Life	45-90 minutes
Observe Human Impact	30 minutes
Putting It All Together	45 minutes

COMBINING THE ACTIVITIES

The activities in this unit are displayed singly. Depending upon the time available, and the skill of the participants, you may choose to do only one activity or the entire series. For maximum learning, the activities should be experienced in the order listed in the unit; however, other suggestions are:

Suggestion 1:

Title: Observe the Desert Environment/Observe Soil Characteristics/Test Soil Characteris tics

Introduction: The soil in the desert is quite different from soil in the forest, on farm lands, or in your own backyard. Use these activities to note differences and to determine desert soil's unique characteristics.

Activity: Observe the desert environment.

Transition Statement: Let's take a close look at the soil in the desert and describe what we find at different levels.

Activity: Observe soil characteristics

Transition Statement: Now let's look closer at the soil and test it for such characteristics as temperature, texture, acidity, and moisture content.

Activity: Testing soil characteristics.

Transition Statement: By testing and analyzing the soil here, we can draw some conclusions about the implications for the plants and animals living on the desert.

Suggestion 2:

Title: Observe the Desert Environment/Observe Animal Life/Observe Plant Life.

Introduction: It's not easy for living things to survive in a desert environment. They must be able to adapt to a dry and arid land, yet the desert is home to many animals and much vegetation. These activities will help you determine what kinds of plants and animals have adapted to this environment.

Activity: Observe the Desert Environment.

Transition Statement: By locating a number of animals in different locations, we will be able to determine what their needs are and how they interrelate.

Activity: Observe Animal life

Transition Statement: Just as the animals must adapt, so must the plants. Also, plants and animals may depend on each other in order to survive and thrive in the desert community.

Activity: Observe Plant life

Transition Statement: If you had to summarize our discussions and investigations into several generalizations or summary statements, what would you say? (Record answers on chart).

CURRICULUM RELATIONSHIPS

Social Studies

1. Read about land management practices that people use to increase the productivity of desert land.
2. Learn what your state is doing to increase desert land use.
3. Discover which desert animals contribute to your state's economy..
4. Nomads are often associated with desert environments. Research and write a paper describing the interesting lifestyle of these people in the world's deserts.

Science

1. Determine how an animal's fur, feathers, scales, or hair may help insulate it. Discover other unique adaptations of desert animals.
2. Identify and classify the physical requirements of plants that enable them to survive on the desert, or "invent" a plant (with adaptations) that is suitable for the desert ecosystem.
3. Read about the effects of weather on the natural environment. For example, what weather elements favorably or adversely affect desert plants and animals.
4. Setup, research and collect plant examples from the desert. House in your science department.

Mathematics

1. Measure the weather using various tools such as a barometer, anemometer, or psychrometer.
2. Calculate the acres and percentages of desert land in: your state; country; the world.
3. Measure and calculate the amount of soil erosion in a given area.

Language Arts

1. Use similes and metaphors in a descriptive paragraph about a desert animal.
2. Write an article for your school newspaper explaining what people can do to improve and use our desert land.
3. Write a poem about a dust (or lightning) storm on the desert.
4. Read Shabanu, Child of the Wind or any other book set in a desert. Prepare a report in any format emphasizing the importance of the desert to the main character's way of life.

Creative Arts

1. Draw pictures of desert vegetation.
2. Write a ballad about life on the desert.
3. Make a collage of all the plants and animals on the desert.
4. Study the art of desert cultures. What do you think are the environmental influences on the art. Are there similarities in different cultures' art that can be explained by the similarities in their environment?

OBSERVE THE DESERT ENVIRONMENT

CONCEPT: Organism, Order, System

PRINCIPLE: Many factors contribute to the desert environment—animals, vegetables, minerals, climate, etc.

OBJECTIVE:
- Students will be able to observe and record their observations of a desert area.

PREPARATION: Conduct a discussion with students to find out what they already know. Teachers may also want to assign parts of the activities ahead of time as homework.

MATERIALS NEEDED
- Activity Sheet A: Observe a Desert Environment
- Pencils

PROCESSES USED
- Observe
- Communicate
- Classify

TIME 25 minutes

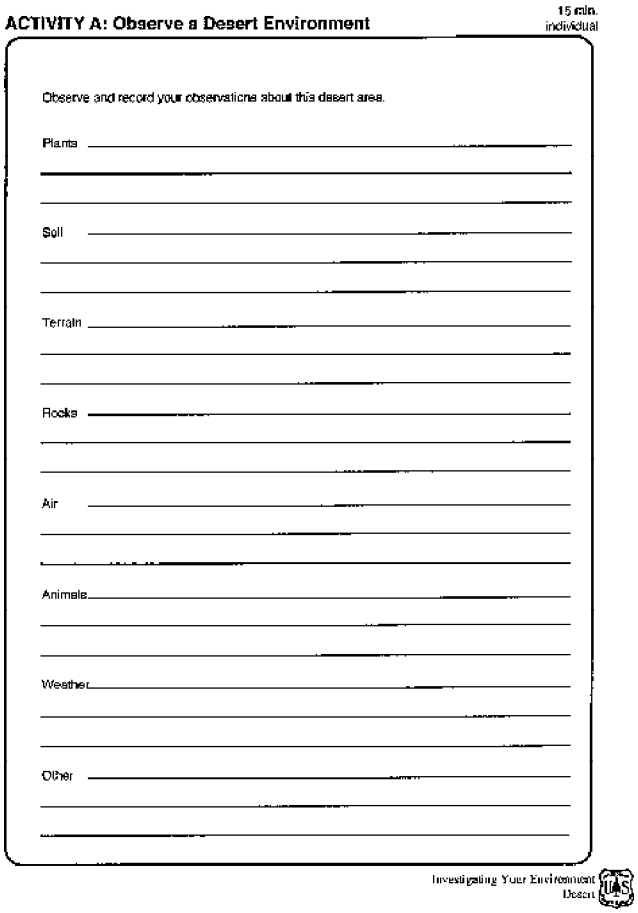
DOING THE ACTIVITY (outdoors)

A. Set Stage:

Many living and non-living things influence and are part of the desert environment. Let's see what we can find.

B. Procedure:

Distribute Activity A sheet and have students use this to record their observations. Encourage them to use the "other" category to record phrases, sensations, colors, etc., that they don't want to lose. Tell them they have 15 minutes.


ACTIVITY A: Observe a Desert Environment

15 min.
individual

Observe and record your observations about this desert area.

Plants

Soil

Terrain

Rocks

Air

Animals

Weather

Other

Investigating Your Environment
Desert

C. Retrieve data:

1. What did you notice about the desert?
2. What did you notice about plant life?
3. What did you notice about the soil?
4. What evidence of animal life did you find?
5. Turn to someone you did not work with and share one of your observations about the desert.
6. What do you observe as the biggest difference between this desert environment and other environments in which you have lived?

CLOSURE From our investigation how could we define a "desert?"

TRANSITION We have investigated a number of factors that contribute to the desert environment. Now let's focus on weather and how it affects the desert environment.

OBSERVE THE WEATHER FACTORS

CONCEPT Probability, Fundamental Entities, Interaction, Quantification, Replication

PRINCIPLE Various means can be used to observe and predict weather conditions. Once students have made their predictions based upon their best knowledge, instruments will be used to modify the prediction.

OBJECTIVE

- Students will be able to observe, record, and predict the weather conditions on the desert, by using various instruments.
- Students will use appropriate instruments to verify their predictions.

PREPARATION Locate a suitable site for this lesson. Make an enlarged copy of Activity Sheet C. Familiarize yourself with how the equipment works.

MATERIALS NEEDED

- Activity Sheet B: Measuring Weather Factors
- Pencils
- Enlarged copy of Activity Sheet B
- For each group:
  - Thermometers
  - Wind speed indicators
  - Sling psychrometers
  - Pint size jars
  - Water

PROCESSES USED

- Observe
- Measure
- Infer
- Communicate
- Use numbers
- Predict
- Interpret data
- Classify

TIME 45 minutes

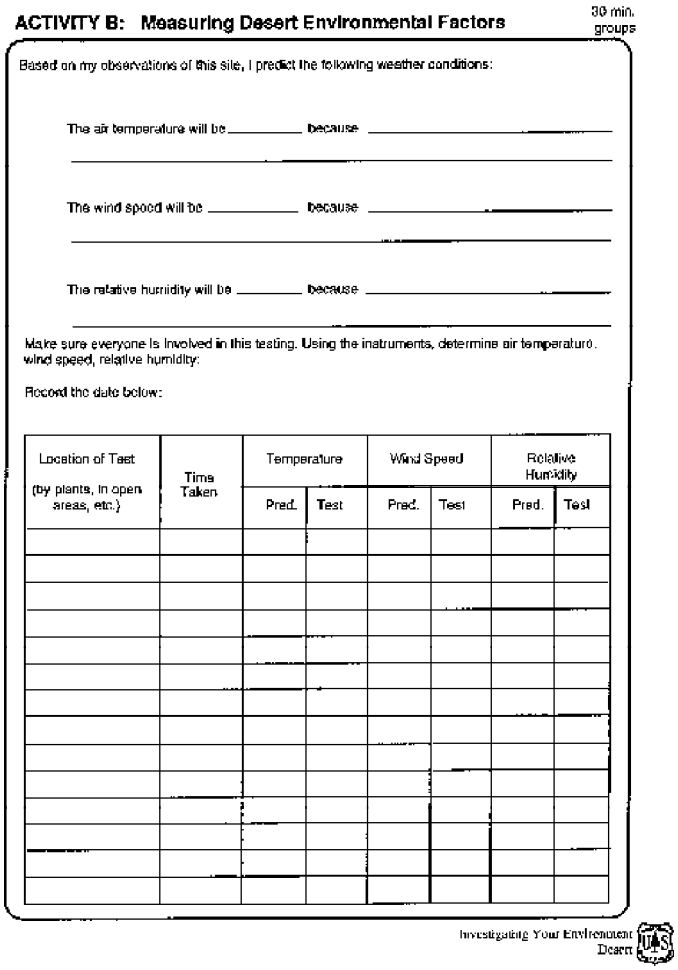
DOING THE ACTIVITY (outdoors)

A. Set Stage:

Weather factors and climate are important influences in the desert. In this activity we will predict some weather factors and take measurements to test our predictors. Brainstorm various weather conditions students have observed in their past experiences.

B. Procedure:

1. Distribute Activity Sheet B.
2. Have students work in groups of 3 or 4 to complete the predictions column on Activity Sheet B.
3. Have students report findings in 10 minutes.



ACTIVITY B: Measuring Desert Environmental Factors

30 min. groups

Based on my observations of this site, I predict the following weather conditions:

The air temperature will be _____ because _____

_____

The wind speed will be _____ because _____

_____

The relative humidity will be _____ because _____

_____

Make sure everyone is involved in this testing. Using the instruments, determine air temperature, wind speed, relative humidity.

Record the data below:

Location of Test (by plants, in open areas, etc.)	Time Taken	Temperature		Wind Speed		Relative Humidity	
		Pred.	Test	Pred.	Test	Pred.	Test

Investigating Your Environment Desert

C. Retrieve Data:

1. Bring the groups back together. On an oversized example of Activity B, have each group record their data. Then facilitate a discussion using the following questions:

   a. What do you notice about the results?
   b. How did you make your predictions?
   c. How do your results compare with your predictions?
   d. Under what conditions might we get different test results?
   e. How do weather conditions differ from other areas?
   f. How do you account for those differences?
   (NOTE: Cover "rain shadow effect" if appropriate in your area)

2. We can test our predictions about weather conditions by using the thermometer, wind speed indicator, and sling psychrometer. There are a number of jobs to do in making the tests, so make sure everyone has an activity to complete.

3. Demonstrate use of the instruments.

4. Allow students 15-20 minutes to complete activity and record data.

CLOSURE What can we say about weather conditions in the desert? Write down 5 descriptive words about the desert.

TRANSITION We have focused on weather conditions in the desert. Now let's focus on another environmental factor: soils.

OBSERVE SOIL CHARACTERISTICS

CONCEPT System, Cause-Effect, Quantification, Invariance

PRINCIPLE Desert soils are characteristically different from those with higher precipitation.

OBJECTIVE
- Students will be able to investigate and report on desert soils.
- Students will be able to compare results with other groups.
- Students will be able to draw generalizations about desert soil.

PREPARATION Identify suitable pit. Dig soil pit.

MATERIALS NEEDED
- Activity Sheet C: Investigating Desert Soils
- Pencils
- Shovels and hand trowels
- Rulers

PROCESSES USED
- Observe
- Infer
- Communicate
- Use numbers
- Classify
- Interpret data
- Predict

TIME 25 minutes

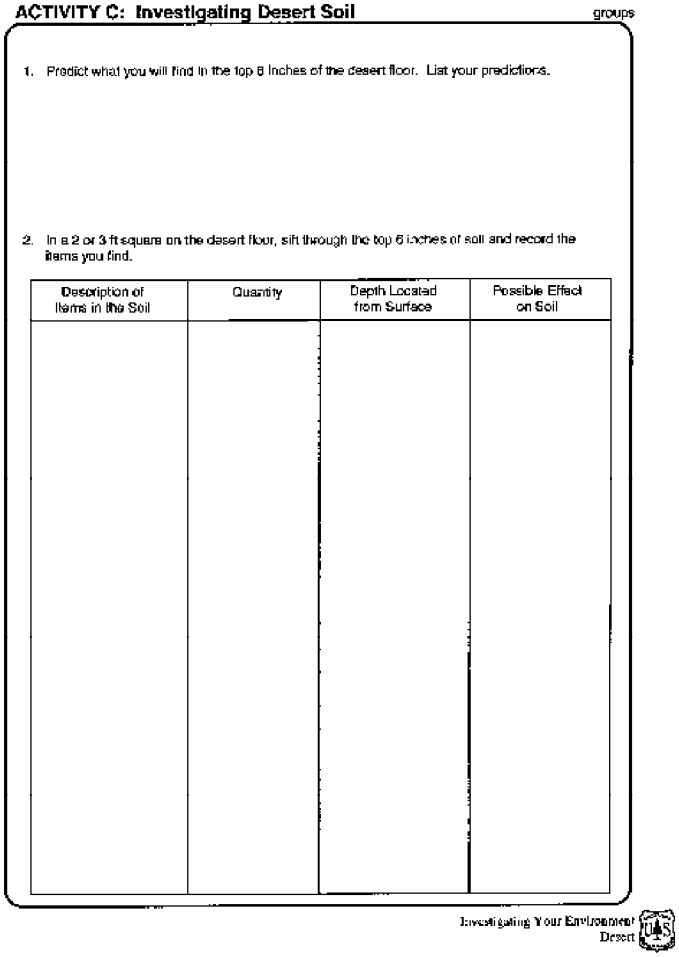
DOING THE ACTIVITY (outdoors)

A. Set Stage:

Desert soils are quite different from soils in areas with high rainfall. Let's take a look at the soil. What might you expect to find?

B. Procedure:

1. Distribute Activity C Sheets.
2. Arrange students in groups of 3 or 4.
3. Report findings in 15 minutes.



ACTIVITY C: Investigating Desert Soil groups

1. Predict what you will find in the top 6 inches of the desert floor. List your predictions.

2. In a 2 or 3 ft square on the desert floor, sift through the top 6 inches of soil and record the items you find.

Description of Items in the Soil	Quantity	Depth Located from Surface	Possible Effect on Soil

Investigating Your Environment
Desert

C. Retrieve Data:

Students use completed Activity C cards as basis for discussion. Questions the facilitator can use are:

1. What did you find?
2. How do the items from the bottom part of your sample compare with the items found near the surface?
3. How did your findings compare with other groups?

CLOSURE Share with your group one finding. One groups' finding may be different from another groups. Record your similarities and differences on a flip-chart. (Facilitators, set up a simple chart for recording, e.g.)

SIMILARITIES	DIFFERENCES

TRANSITION Our next study builds upon this lesson. We have observed desert soil conditions, now let's test some soil characteristics. Note: If Activity D is to be done, facilitator may wish to dig soil pit (or "freshen" it up) while participants complete Activity Sheet C. (See "Preparation under Test Soil Characteristics Lesson Plan - next page)

TEST SOIL CHARACTERISTICS

CONCEPT Cause/Effect, Interaction, Quantification, Gradient, Replication

PRINCIPLE Soil characteristics such as texture, temperature, pH (acidity or alkalinity), and moisture content are indications of soil conditions that may affect the plant and animal life present.

OBJECTIVE

- Students will be able to determine soil texture, temperature, pH, and moisture at three separate levels in the soil profile, then determine implications for plant and animal life in that area.

PREPARATION Site and dig a soil pit. Cover until ready to use to prevent soil temperature and moisture changes that can affect result. Practice using the instruments so you can help students as needed.

MATERIALS NEEDED

- Activity Sheet D: Testing Soil Characteristics
- Pencils
- Shovels and trowels
- Rulers
- Soil thermometers
- Soil pH kits
- Soil moisture indicators (available at nurseries)
- Pint size jars
- Canteens of water

PROCESSES USED

- Observe
- Measure
- Infer
- Use numbers
- Communicate
- Control variables
- Interpret data

TIME 45 minutes

DOING THE ACTIVITY (outdoors)

A. Set Stage:

The characteristics of soil directly affect the plant and animal life in that area. In this activity we will determine those characteristics. Each group should have Activity D from the previous lesson.

B. Procedure:

1. Distribute Activity D cards.
2. Review techniques for gathering soil data.
3. Students work in small groups to complete sheet D. Tell them they have 25 minutes.

25 min.
groups

ACTIVITY D: Testing Soil Characteristics

Determine soil texture, temperature, pH, and moisture presence at three separate levels in the soil profile. Record your data in the table below.

Layer	Texture	Temperature	pH	Moisture Presence
At Surface				
Depth of 1-2 feet				
Depth of 3 feet				

Texture: Determine texture by feel or by sediment layer.
feel: Push and rub moistened soil sample between thumb and forefinger. Spit on sample to moisten.

Gritty feel . . . . . .sand
Smooth, slick, not sticky. . . . . .silt
Smooth, slick, sticky. . . . . .clay

sediment layer: Place sample in jar of water, shake and allow soil to settle. Sand will settle first as it is the largest particle size. Silt will settle second. Clay, which is the smallest particle size, will settle last. Compare layers and determine percentage of sand, silt, and clay.

Temperature: Determine using soil thermometer. Be sure to insert probe full distance in soil. Leave it in the soil 3-5 minutes before taking reading

pH: Determine using LaMotte test kits. Demonstrate the use of the kit. Mention not to compact soil sample in the porcelain dish, use just enough pH reagent to saturate the soil sample, match color at the edge of the soil sample and porcelain dish with pH color chart.

Moisture: Presence can be determined by placing soil sample in jelly cup and cover tightly. Leave in sun. Any moisture will condense on jar sides. This will only indicate presence of moisture – not amount! You can also use a "Moisture Meter" available at your local nurseries.

Investigating Your Environment
Desert

C. Retrieve Data:

1. What were your test results?
2. How do you account for differences/similarities between group's data?
3. Why did we keep the soil pit covered until we were ready to use it?
4. Based on soil characteristics, what are the implications for plant and animal life there?

Note: The facilitator will want to show the data to the entire group in some fashion (See "closure" under last activity)

CLOSURE Share with your work group, one new thing you learned and one thing you think was positive about working with this group. What conclusions can we draw about soil conditions in this area?

TRANSITION We have investigated two abiotic (nonliving) components of the desert environment, now let's investigate the first biotic component -- the animals of the desert.

OBSERVE ANIMAL LIFE

CONCEPT

Organism, Interaction, Population, Equilibrium, Quantification Model

PRINCIPLE

Animals must adapt to their environment in order to survive.

OBJECTIVE

Students will be able to:

- Investigate and report their findings.
- Compare results with other groups.
- Draw generalizations about the needs of animals in adapting to a desert environment.

PREPARATION

Read activity.

MATERIALS NEEDED

- Activity Sheet E: Observe Desert Animals and Activity Sheet F: Desert Animal Relationships
- Paper for drawing or writing
- Ball of string
- 3 push pins per group plus extras

PROCESSES USED

- Observe
- Infer
- Communicate
- Use numbers
- Classify
- Formulate models

TIME

75 minutes. There are two lessons here. The first must be done outdoors (45 minutes); the second can be used as follow up in the classroom.

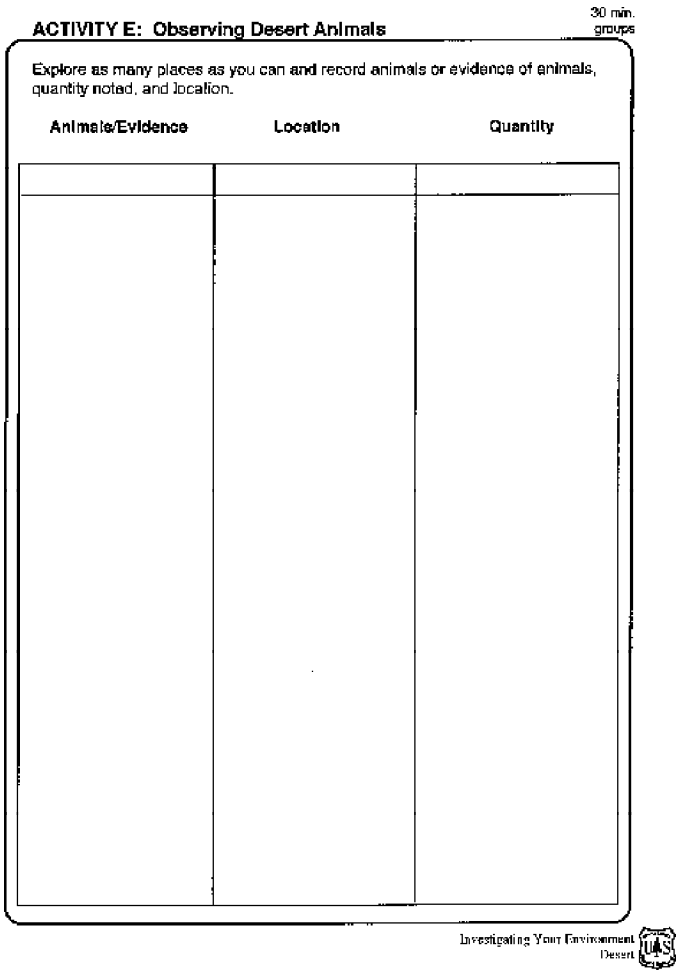
DOING THE ACTIVITY (outdoors/indoors)

A. Set Stage:

Animals that live in the desert have developed special behaviors and adaptations to survive there. In this activity we will see what evidence of animals we can find!

B. Procedure:

1. Ask students what kinds of animal life they might expect to find in a desert environment, what the needs of animals are, and where they would look for animals in the desert.
2. Distribute Activity Sheet E. They have 30 minutes to complete.



30 min.
groups

ACTIVITY E: Observing Desert Animals

Explore as many places as you can and record animals or evidence of animals, quantity noted, and location.

Animals/Evidence	Location	Quantity

Investigating Your Environment
Desert

3. Arrange students in groups of 3-4.
4. Have students complete Activity Sheet E and be prepared to report findings.

C. Retrieve Data:

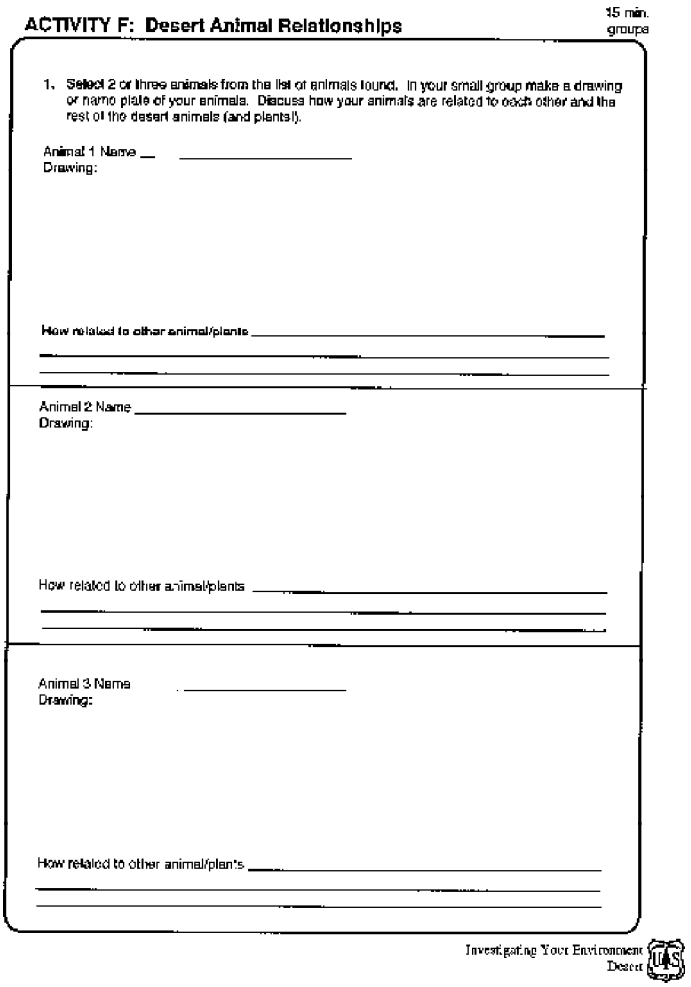
Students use completed Activity E cards to take part in a discussion. The following questions may be helpful to the discussion:

1. What animals did you find?
2. Where did you find them?
3. How do you account for differences in quantity?
4. What do you think is the function of these animals in the environment?
5. (Review) What are the basic needs of animals?
6. How have the animals you found adapted to the desert in order to meet their needs?

NOTE: You may need to visually show some of the information for your visual learners.

D. Procedure 2:

1. Distribute Activity F. Work in groups of 2. They have 15 minutes to complete. (Note: This is an optional activity you can do in the classroom after you have completed the field work.)



ACTIVITY F: Desert Animal Relationships

15 min. groups

1. Select 2 or three animals from the list of animals found. In your small group make a drawing or name plate of your animals. Discuss how your animals are related to each other and the rest of the desert animals (and plants!).

Animal 1 Name _____
Drawing:

How related to other animal/plants _____

Animal 2 Name _____
Drawing:

How related to other animal/plants _____

Animal 3 Name _____
Drawing:

How related to other animal/plants _____

Investigating Your Environment
Desert

2. Groups post animals on the chart provided by the facilitator. Place a push pin by each animal.
Note to Facilitator: You may wish to add soil and plant cards either before or during the discussion.

E. Retrieve Data:

As they discuss their pictures, they should share with the rest of the group the names of their animals and how they are interrelated, showing the relatedness by connecting the push pins by each animal with yarn or string.

CLOSURE When all groups have shared, discuss your "model" of the desert animal interrelationships. Then pull one of the pens and discuss the tangled mess. (e.g. What happens if we eliminate all the coyotes?) What have we found out about animal relationships?

TRANSITION You often hear people talk about the "flora and fauna" of an area. We've just studied about the fauna of the desert. Animals (the "fauna") require plants (either directly or indirectly) to survive. Let's look at desert plants - the "flora" of the desert.

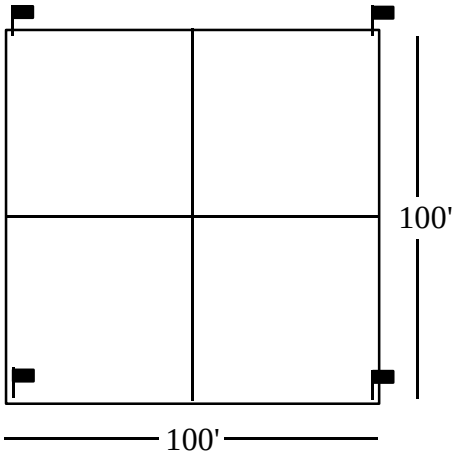
OBSERVE PLANT LIFE

CONCEPT Organism, Evolution, Population, Order, Quantification

PRINCIPLE Plants must respond to their environment in order to survive.

OBJECTIVE Students will be able to:
- Investigate desert plants and report their findings.
- Compare results with other groups.
- Draw generalizations about the needs of plants adapted to a desert environment.

PREPARATION Stake out a 100' square area and divide into four 50' square areas as illustrated. Mark each of the nine corners with a different color flag.



MATERIALS NEEDED
- Activity sheets and pencils
- Sketch paper and sketching materials
- 9 different color flags
- Circle labels (Office supply store)
- 100' measuring tapes on rope lengths
- 12 X 12" poster board - 1/group

PROCESSES USED
- Observe
- Infer
- Classify
- Communicate
- Use numbers

TIME 45-90 minutes (45 minutes for first activity. Second activity is optional - add a second 45 minutes if you choose to do this one)

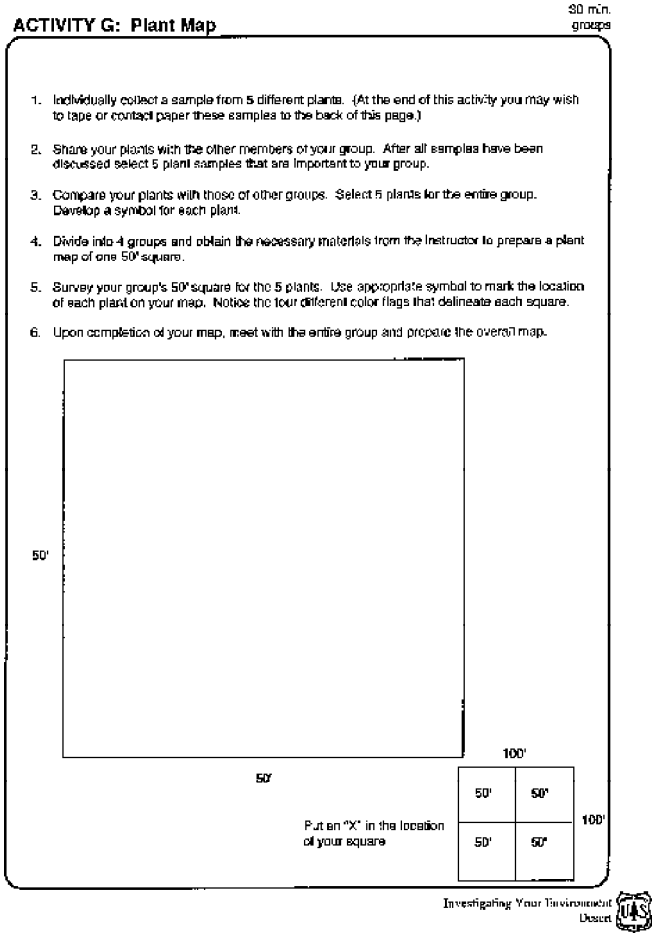
DOING THE ACTIVITY (outdoors)(45 minutes)

A. Set Stage:

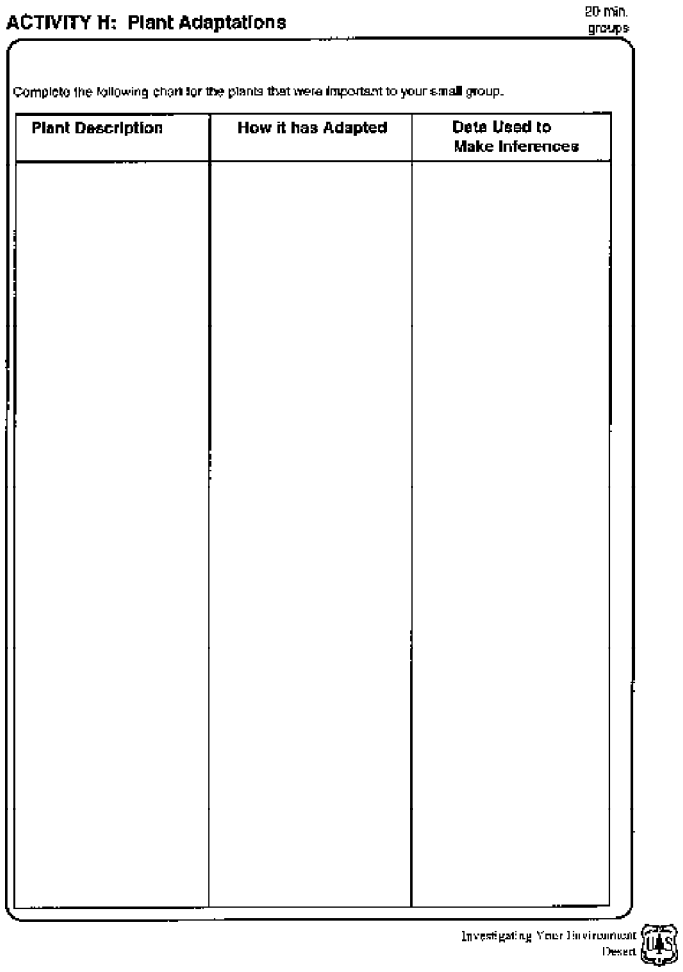
Desert plants respond to their environment in different ways in order to grow and reproduce. In this activity we will look at some of the plant adaptations in this area.

B. Procedure:

1. Arrange students into groups of 4 or 5.
2. Ask students what kinds of plant life they might expect to find in a desert environment, what the needs of plants are, and where they would look for plants in the desert.
3. Pass out Activity Sheet G and materials needed to prepare plant map. Obtain square 12" X 12" of poster board for map preparation. Suggest color circles with adhesive backing (get at office supply store) to use as symbols for plants. Using appropriate symbols, the students should plot the location of the plants within their area on the poster board squares. Give the group 20 minutes to complete.



4. Review instructions on Activity Sheet G. Point out that each group's 50' square is delineated by four different color flags. Assign squares to each group.
5. Have groups complete Activity Sheet G and return in 30 minutes.
6. As an optional activity, complete Activity H, working in small groups. The activity takes 20 minutes.



ACTIVITY H: Plant Adaptations

20 min.
groups

Complete the following chart for the plants that were important to your small group.

Plant Description	How it has Adapted	Data Used to Make Inferences

Investigating Your Environment
Desert

C. Retrieve Data:

1. What did you find in your area?
2. How did your area compare with other areas?
3. How did you account for the differences or similarities?
4. Discuss adaptation--how things respond to their environment in order to survive.
5. How have your plants adapted to this environment?
   SUMMARY: What can we say about the plant community at this site?

TRANSITION Desert plants and animals must adapt to survive in their environment. Rather than adapt to the desert environment, as humans we often change the environment to suit our needs. We call this "Human Impact". Let's look at how this happens.

(NOTE: Depending upon how you are using these lessons and your site - there are two Project Wild activities you could use to extend knowledge of adaptation - "The Thicket Game" and "Adaptation Artistry." "Fashion & Fish" from Aquatic Wild might also be useful.)

OBSERVE HUMAN IMPACT

CONCEPT Interaction, Cause/Effect, Change

PRINCIPLE Human use positively and negatively affects the desert.

OBJECTIVE Students will be able to:
- Investigate the impact of people on the desert.
- Compare results with other groups.
- Draw conclusions about how human use affects desert areas.

PREPARATION Select a suitable site for this activity.

MATERIALS NEEDED
- Activity I: Observe Human Impact

PROCESSES USED
- Observe
- Infer
- Communicate
- Interpret data

TIME 30 minutes

DOING THE ACTIVITY (outdoors)

A. Set Stage:

People affect the desert environment in beneficial and harmful ways. In this investigation we will see what affect people have had on this area.

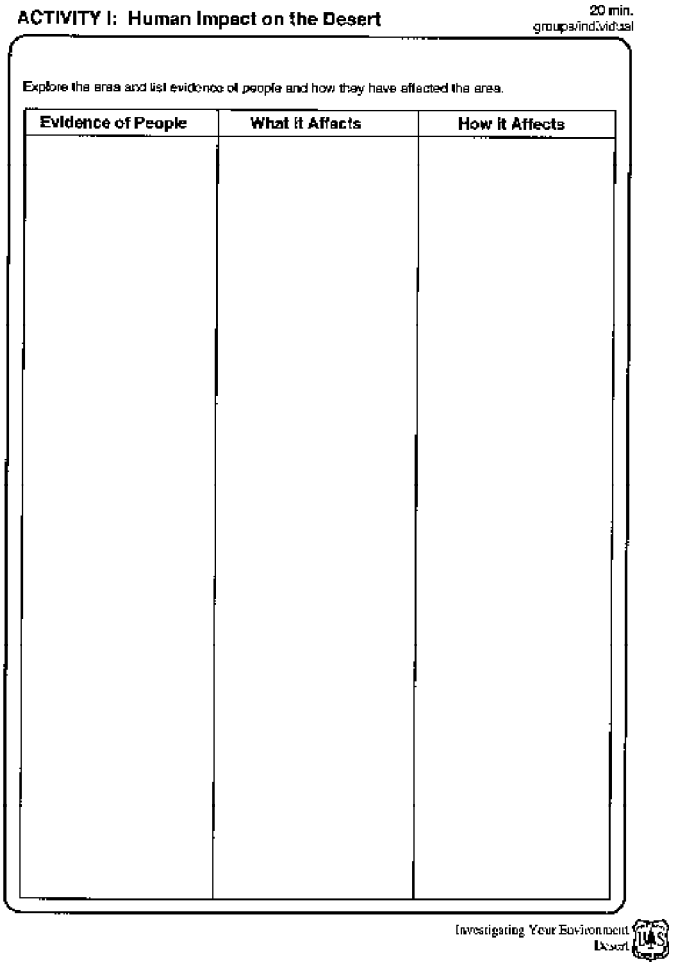
B. Procedure:

1. Distribute Activity Sheet I.
2. Have students work individually or in pairs to complete sheet I.
3. Be prepared to report findings in 15 minutes.

C. Retrieve Data:

Students use completed Activity I cards to discuss:

1. What evidence of people did you find?
2. How have they affected the area?
3. How do you feel about human impact here?
4. What could people do to improve the environment?



ACTIVITY I: Human Impact on the Desert 20 min. groups/individual

Explore the area and list evidence of people and how they have affected the area.

Evidence of People	What it Affects	How it Affects

Investigating Your Environment Desert

CLOSURE Discuss in your group - Is everything humans do, in an environment, beneficial? List one example of a human action in the desert environment which has been beneficial. Harmful? What can we say about the effects of people on this environment?

TRANSITION We have been gathering information about various aspects of the desert environment. Now it is time to review the entire desert ecosystem.

PUTTING IT ALL TOGETHER

CONCEPT Perception

PRINCIPLE A desert environment is unique and can be clearly defined.

OBJECTIVE
- Students will be able to write a description of a desert environment.

PREPARATION Conduct a discussion encouraging students to think about all the ideas they learned in the previous lessons. Copy Activity J and K back-to-back, one for each student.

MATERIALS NEEDED
- Activity Sheets J: Putting it all Together and K: Feelings
- Pens or pencils

PROCESSES USED
- Define operationally
- Infer
- Communicate
- Interpret data

TIME 45 minutes

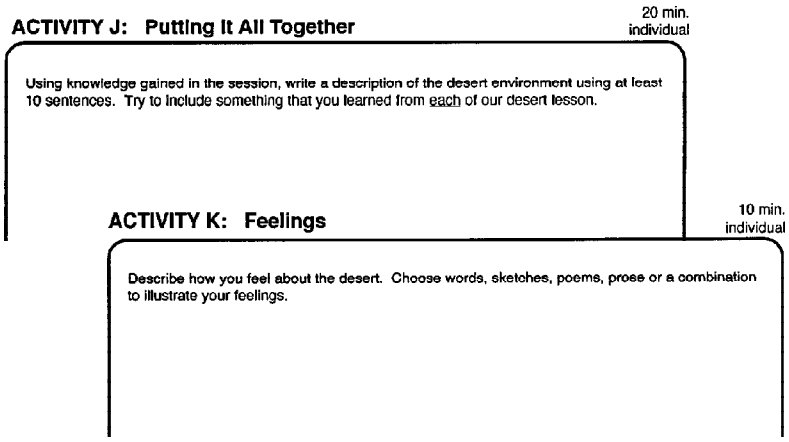
DOING THE ACTIVITY

A. Set Stage:

In the next 30 minutes, you will work by yourself to explore your understanding of this desert site. I will signal when it is time to begin working on the second activity. Follow the written instructions on the activity sheets. Remain silent after you are done.

B. Procedure:

Distribute Activity J and K sheets.



C. Retrieve Data:

Students share their completed Activity K and L cards, using the following questions as discussion starters:

1. Have students share their description and feelings if they wish.
2. What did we discover about the desert environment today?

CLOSURE In summary, how is a desert different from other areas? Quickly list the common factors of desert. How can we summarize our investigations and discussions? What are some of the things in the desert about which you would like to know more?

ACTIVITY A: Observe a Desert Environment

15 min.
individual

Observe and record your observations about this desert area.

Plants _____

Soil _____

Terrain _____

Rocks _____

Air _____

Animals _____

Weather _____

Other _____

ACTIVITY B: Measuring Desert Environmental Factors

30 min.
groups

Based on my observations of this site, I predict the following weather conditions:

The air temperature will be _____ because _____

_____

The wind speed will be _____ because _____

_____

The relative humidity will be _____ because _____

_____

Make sure everyone is involved in this testing. Using the instruments, determine air temperature, wind speed, relative humidity:

Record the date below:

Location of Test (by plants, in open areas, etc.)	Time Taken	Temperature		Wind Speed		Relative Humidity	
		Pred.	Test	Pred.	Test	Pred.	Test

ACTIVITY C: Investigating Desert Soil

groups

1. Predict what you will find in the top 6 inches of the desert floor. List your predictions.

2. In a 2 or 3 ft square on the desert floor, sift through the top 6 inches of soil and record the items you find.

Description of Items in the Soil	Quantity	Depth Located from Surface	Possible Effect on Soil

25 min.
groups

ACTIVITY D: Testing Soil Characteristics

Determine soil texture, temperature, pH, and moisture presence at three separate levels in the soil profile. Record your data in the table below.

Layer	Texture	Temperature	pH	Moisture Presence
At Surface				
Depth of 1-2 feet				
Depth of 3 feet				

Texture: Determine texture by feel or by sediment layer.
feel: Push and rub moistened soil sample between thumb and forefinger. Spit on sample to moisten.

Gritty feel . . . . . .sand
Smooth, slick, not sticky . . . . . .silt
Smooth, slick, sticky. . . . . .clay

sediment layer: Place sample in jar of water, shake and allow soil to settle. Sand will settle first as it is the largest particle size. Silt will settle second. Clay, which is the smallest particle size, will settle last. Compare layers and determine percentage of sand, silt, and clay.

Temperature: Determine using soil thermometer. Be sure to insert probe full distance in soil. Leave it in the soil 3-5 minutes before taking reading.

pH: Determine using LaMotte test kits. Demonstrate the use of the kit. Mention not to compact soil sample in the porcelain dish, use just enough pH reagent to saturate the soil sample, match color at the edge of the soil sample and porcelain dish with pH color chart.

Moisture: Presence can be determined by placing soil sample in jelly cup and cover tightly. Leave in sun. Any moisture will condense on jar sides. This will only indicate presence of moisture -- not amount! You can also use a "Moisture Meter" available at your local nurseries.

30 min.
groups

ACTIVITY E: Observing Desert Animals

Explore as many places as you can and record animals or evidence of animals, quantity noted, and location.

Animals/Evidence	Location	Quantity

ACTIVITY F: Desert Animal Relationships

15 min.
groups

1. Select 2 or three animals from the list of animals found. In your small group make a drawing or name plate of your animals. Discuss how your animals are related to each other and the rest of the desert animals (and plants!).

Animal 1 Name _____
Drawing:

How related to other animal/plants _____

Animal 2 Name _____
Drawing:

How related to other animal/plants _____

Animal 3 Name _____
Drawing:

How related to other animal/plants _____

ACTIVITY G: Plant Map

30 min.
groups

1. Individually collect a sample from 5 different plants. (At the end of this activity you may wish to tape or contact paper these samples to the back of this page.)

2. Share your plants with the other members of your group. After all samples have been discussed select 5 plant samples that are important to your group.

3. Compare your plants with those of other groups. Select 5 plants for the entire group. Develop a symbol for each plant.

4. Divide into 4 groups and obtain the necessary materials from the instructor to prepare a plant map of one 50' square.

5. Survey your group's 50' square for the 5 plants. Use appropriate symbol to mark the location of each plant on your map. Notice the four different color flags that delineate each square.

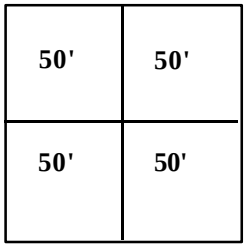
6. Upon completion of your map, meet with the entire group and prepare the overall map.

50'

50'

100'

Put an "X" in the location of your square



ACTIVITY H: Plant Adaptations

20 min.
groups

Complete the following chart for the plants that were important to your small group.

Plant Description	How it has Adapted	Data Used to Make Inferences

ACTIVITY I: Human Impact on the Desert

20 min.
groups/individual

Explore the area and list evidence of people and how they have affected the area.

Evidence of People	What it Affects	How it Affects

ACTIVITY J: Putting It All Together

20 min.
individual

Using knowledge gained in the session, write a description of the desert environment using at least 10 sentences. Try to include something that you learned from each of our desert lesson.

ACTIVITY K: Feelings

10 min.
individual

Describe how you feel about the desert. Choose words, sketches, poems, prose or a combination to illustrate your feelings.