STORIES of WORLD HERITAGE

primary teacher guide

Learning how to live sustainably from ancient communities to modern factories

- M’ZAB VALLEY, ALGERIA
- KAKADU NATIONAL PARK, AUSTRALIA
- WEST LAKE CULTURAL LANDSCAPE, CHINA
- COFFEE CULTURAL LANDSCAPE, COLOMBIA
- ROCK-HEWN CHURCHES OF LALIBELA, ETHIOPIA
- FAGUS FACTORY, GERMANY
- CLIFFS OF BANDIAGARA, MALI
- CULTURAL LANDSCAPE OF AGAVE, MEXICO
- EVERGLADES, UNITED STATES
- TAOS PUEBLO, UNITED STATES

www.worldheritage.si.edu
Protection, Preservation, and Prosperity: Stories of World Heritage is produced by the Smithsonian Institution. Teachers may duplicate the materials for educational purposes.

Much of the material is adapted from UNESCO’s Young Hands: To Know, Cherish and Act: An educational resource kit for teachers. For more classroom suggestions and information about the World Heritage sites featured in this publication please visit: http://whc.unesco.org.

Founded in 1846, the Smithsonian Institution is the world’s largest museum and research complex consisting of 19 museums and galleries, the National Zoological Park and nine research facilities. The Institution was established for the “increase and diffusion of knowledge” and is dedicated to the understanding and preservation of humanity’s cultural heritage, the encouragement of contemporary cultural creativity, unlocking the mysteries of the universe, and the understanding and sustaining of the planet’s biodiversity.

The United Nation Educational, Scientific and Cultural Organization (UNESCO) was founded in 1945 to promote intellectual and moral solidarity between states. The organization developed five specific programs: education, natural sciences, social and human sciences, culture, communication and information. Through the implementation of these themes UNESCO wants to contribute to the building of peace, the eradication of poverty, sustainable development and intercultural dialogue. UNESCO operates jointly with specialized departments, member states, non-governmental organizations and the private sector.

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Stories of World Heritage
PRIMARY SCHOOL
LESSON PLANS

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Kakadu National Park, Photo: Stefano Liboni (CC BY-NC-SA).
Background

...deterioration or disappearance of…the cultural or natural heritage constitutes a harmful impoverishment of the heritage of all the nations of the world.

Preamble to the World Heritage Convention

In 1972, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) gathered together 187 countries from around the world to create a tool to protect and conserve sites of cultural and natural heritage with outstanding universal value.

Heritage can be defined as those places and objects we wish to keep; cultural and natural places that we value because they come from our ancestors; places that are beautiful, scientifically important, or irreplaceable examples and sources of life and inspiration. They are our touchstones, our points of reference, our identity. This heritage often reflects the lives of our ancestors and often survives today only because of specific efforts to preserve it.

The World Heritage Convention is an effort by the nations of the world to identify, understand, and preserve heritage that has universal value and codify our obligation as caretakers of these places and objects.

The Concept of World Heritage

- Conservation of heritage of outstanding universal value
- Both cultural and natural heritage
- Conservation of irreplaceable heritage
- Conservation of World Heritage is dependent on collective international action

Above L-R: Taos de Pueblo, Photo: Tolks Rover (CC BY-NC-SA), Kakadu National Park, Alligator, Photo: Digitalreflections (CC BY-ND) Bandiagara, Photo: Martha de Jong-(CC BY-NC-SA); Painting – El Rio de Luz, Frederick Edwin Church, 1877, Courtesy National Gallery of Art.
For what is the value of protecting and preserving heritage through specialized institutions and national legislation if we do not instill the reasons for protecting it in the minds of the young?

Bozo Biskupic, Minister of Culture, Croatia

DEFINING HERITAGE AND CONSERVATION

As an introduction to the World Heritage Convention website and educational activities, ask your students to define Heritage and Conservation.

Curricular Areas: Social Studies, Global Connections, Geography, Individual Development & Identity, Speaking & Listening

• Lead a discussion with your students about what these concepts mean to them and how they might affect their lives.
• Ask your students to identify places in your community that represent heritage and/or conservation, and state what they think the value of having these sites is.
• Ask your students to write a brief paragraph on what heritage and/or conservation means to them.

Girl’s Legging Moccasins
Deerhide/deerskin, clay
Taos Pueblo circa 1930
National Museum of the American Indian, Smithsonian Institution
Donated by Ernest S. Carter
Photo: R.A. Whiteside
What is Sustainability?

Sustainability is based on a simple principle: everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.

Sustainability is important to making sure that we have and will continue to have, the water, materials, and resources to protect human health and our environment.

U.S. Environmental Protection Agency

Sustainability is something we talk about a lot today. In the past, we generally thought about each resource and how it would help us, not how its use might impact the world around us. For example, think of a situation where people are moving into an area and need places to live. The builders and planners see open farmland on which the homes could be built. The builders and planners may not be thinking of the wildlife that lives on that land and how the animals and plants would lose their habitat, how that land serves as a filter to waterways and helps prevent pollution, how it provides locally produced food that doesn’t require large amounts of energy to transport from one place to another. Sustainability means considering the whole and not just each part.
Today we are more aware of how one change to the environment will impact another. We are also aware of how much people use resources that cannot be replaced. To make the world a more livable place now and in the future, we are beginning to think in terms of sustainability.

The ten sites featured on the website Protection, Preservation, and Prosperity: Stories of World Heritage represent cultures that understood sustainability without necessarily understanding the scientific reasons behind it. The people who lived in these cultures knew if they harvested and ate every plant there would not be seeds to grow the next year or the wild animals that lived off the leftovers would not have enough to live on during the winter, and the people would lose another food source. They knew the importance of water to grow their crops and for their own needs, and that water needed to be clean and healthy. They knew that they needed to be able to provide their own food through farming, gathering, animal husbandry, or hunting.

Today, we are often in a position where we have to cope with the choices our ancestors made in the past. Some of those choices were good, but others have left us with pollution, limited energy supplies, and over- or under-populations of native animal species.

Discussion of Sustainability

Before starting the activities in this unit, you may wish to discuss the concept of sustainability. What does sustainability mean? How is it reflected in their community? You can lead a discussion or ask the students to write a brief essay on sustainability in general or you can suggest one of these topics:

- The oil crisis and the growth of alternative fuels that are renewable.
- The extinction of some animals in their community and how that has affected other animal populations. For example, the elimination of hunting species like wolves has led to an increase in the deer populations, which is causing problems in urban areas in some parts of the United States.
- The use of land for development and the resultant increase in water runoff and water pollution.

An issue related to sustainability may be currently affecting your community. You can ask the students to consider that issue or event, the reasons it is happening, and some possible solutions to the problem.
GEOGRAPHY VOCABULARY

Billabongs –
Canyon –
Cliff –
Escarment –
Estuary –
Glades –
Gorge –
Hammocks –
Hectare –
Intertidal –
Lake –
Mangrove Swamp –
Marsh –
Mesa –
Plain –
Plateau –

Prairie –

Ravine –

Region –

Rift –

Shoal –

Slough –

Thalweg –

Uplands –

Valley –

Wadi –
**GEOGRAPHY VOCABULARY ANSWER**

Billabongs – a creek bed holding water only in the rainy season; a dried-up watercourse.

Canyon - a deep valley with steep sides, often with a stream flowing through it.

Cliff – the steep side of an area of high ground.

Escarpment – a long, precipitous, cliff-like ridge of land or rock, commonly formed by faulting or fracturing of the earth's crust.

Estuary – that part of the mouth or lower course of a river in which the river's current meets the sea's tide.

Glades – an open space in a forest.

Gorge – a narrow cleft with steep, rocky walls, especially one through which a stream runs. A small canyon.

Hammocks – an elevated tract of land rising above the general level of a marshy region. (also spelled “Hummock”)

Hectare – a unit of surface, or land, measure equal to 100 acres, or 10,000 square meters; equivalent to 2.471 acres.

Intertidal – the region that is between the high-water mark and the low-water mark.

Lake – a body of fresh or salt water of considerable size, surrounded by land.

Mangrove Swamp- swamp consisting primarily of any tropical tree or shrub of the genus *Rhizophora*, the species of which are mostly low trees growing in marshes or tidal shores, noted for their interlacing above-ground roots.

Marsh - a tract of low wet land, often treeless and periodically inundated with water, generally characterized by a growth of grasses, sedges, cattails, and rushes.

Mesa – a land formation, less extensive than a plateau, having steep walls and a relatively flat top; common in arid and semiarid parts of the Southwest U.S. and Mexico.

Plain – an area of flat land with little differences in elevation, commonly less than 500 feet (150 meters) within the area.

Plateau – a land area having a relatively level surface considerably raised above adjoining land on at least one side and often cut by deep canyons.

Prairie – an area of grassland; meadow.
**Ravine** – a narrow steep-sided valley commonly eroded by running water.

**Region** – an area considered as a unit for geographical, functional, social, or cultural reasons; an administrative division of a country.

**Rift** - a long narrow zone of faulting resulting from tensional stress in the earth’s crust.

**Shoal** – a place where a sea, river, or other body of water is shallow.

**Slough** – an area of soft, muddy ground; swamp or swamp-like region.

**Thalweg** – the line defining the lowest points along the length of a river bed or valley, whether underwater or not. An underground stream following a course similar to that of an overlying above-ground stream.

**Uplands** – an area of land lying above the level where water flows.

**Valley** – a long depression in the land surface, usually containing a river, formed by erosion or by movements in the earth’s crust.

**Wadi** – the channel of a watercourse that is dry except during periods of rainfall. (Similar to a billabong)

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*Arroyo Landscape*  
Victor Higgins  
watercolor on paper  
ca. 1929-1933  
Smithsonian American Art Museum, Gift of Arvin Gottlieb
Geography and World Heritage

BILLABONG  CANYON  CLIFF
ESCARPMENT  ESTUARY  GLADES
GORGE  HAMMOCKS  HECTARE
INTERTIDAL  LAKE  MANGROVE
MARSH  MESA  PLAIN
PLATEAU  PRAIRIE  RAVINE
REGION  RIFT  SHOAL
SLOUGH  SWAMP  THALWEG
UPLANDS  VALLEY  WADI
SUSTAINABILITY VOCABULARY

Preservation -

Conservation -

Restoration -

Endangered -

Invasive -

Native -

Resources -

Indigenous -
Preservation – to keep safe from harm or injury; to prepare so as to resist deterioration.

Conservation - the careful utilization of a natural resource in order to prevent depletion.

Restoration - a return of something to a former, original, normal, or unimpaired condition.

Endangered – threatened with extinction.

Invasive - not native to and tending to spread widely in a habitat or environment.

Native - living or growing naturally in a particular place or region; see indigenous.

Resources - the collective wealth of a country or its means of producing wealth.

Indigenous - originating in and characteristic of a particular region or country; see native.

➢ Taos Pueblo, Photo: L.Harkess (CC BY-2.0) via Fotopedia
Across
2. Not native to and tending to spread widely in a habitat or environment.
5. The careful utilization of a natural resource in order to prevent depletion.
8. To keep safe from harm or injury; to prepare so as to resist deterioration.

Down
1. Originating in and characteristic of a particular region or country; see native.
3. Threatened with extinction
4. Living or growing naturally in a particular place or region; see indigenous.
6. A return of something to a former, original, normal, or unimpaired condition.
7. The collective wealth of a country or its means of producing wealth.
People and the Land

When we Indians kill meat, we eat it all up. When we dig roots, we make little holes. When we build houses, we make little holes. When we burn grass for grasshoppers, we don't ruin things. We shake down acorns and pine nuts. We don't chop down the trees. We only use dead wood...

Wintu Woman, 19th Century

In today's world, we aren't always aware of how we get the things we need to live. We often use resources that don't come from our community, region, or even country. Early people were completely attuned to what was available where they lived. Locally obtainable resources determined how people lived, what kind of work they engaged in, the food they ate, and sometimes even the games they played.

ACTIVITY: Making Connections with the Natural World

Students need to make connections between the natural world and the ancient cultures that developed in order to better understand the cultures represented in Protection, Preservation, and Prosperity: Stories of World Heritage.

Subjects: Environmental Science, Human Development

1) Ask students to select one of the World Heritage sites featured on Protection, Preservation, and Prosperity: Stories of World Heritage.
2) After studying the site, ask students to identify each element of the graphic organizer. Some of the World Heritage sites have more than one ecosystem. For those, the student can just pick one ecosystem. Use the questions on the next page to help guide students if they are unclear as to what type of information is required for each category.
3) Then ask the students to create a graphic organizer for their community.
4) Then lead a discussion asking the students how natural resources may have affected the cultural development of the different sites and their community

Variation for K-2:
The suggested exercises can be done through classroom discussion.
QUESTIONS

**Ecosystem** – In what type of environment is the World Heritage site located? Examples - marsh, temperate, subtropical, etc.

**Natural Resources** – What kinds of animals or plants in the environment help support the society? Examples - fish, birds, coal, trees, etc. Student responses can be general or detailed. An example might be water birds (general) vs. flamingo (specific).

**Food/Diet** – What kinds of food are located there? Is the place known for producing a specific food?

**Community** – What kind of community is the place? Examples – rural, urban, nomadic.

**Architecture/Housing** – What are the buildings made from? How are they constructed? Examples - single family homes, housing complexes like apartments; brick, wood, mud, permanent, temporary.

**Commerce/Jobs** – How do people make a living in the community? Examples – farmer, butcher, weaver.

**Arts/Recreation** – What is the music like? What instruments do they play? What is their art like? How do they spend their leisure time? What games do they play?

**Religion/Belief System** – Do they believe in one god or multiple gods? Nature based or mystical beings? Does the natural world play a major role?

*Florida Seminoles Preparing Food* Fred Beaver (Eka La Nee/Brown Head, Creek) 1948 National Museum of the American Indian, Smithsonian Institution 23/8383
People and the Land

Your Community

The cultures preserved in most of the World Heritage sites are pre-industrial. That means they developed before there were machines, electricity, even indoor plumbing. Think about your community before industrialization. What was it like? How did people live? What did they eat? Where did they sleep? Fill in this worksheet with what you think your community would have been like 500, or even 1,000, years ago.

- Food/Diet
- ECOSYSTEM
- Natural Resources
- Community
- Commerce/Jobs
- Arts/Recreation
- Religion/Belief System
- Architecture/Housing
Sustainability in Agriculture

*The farmer is a poor creature who skims the land and leaves it worthless to his children. The farmer is a good farmer who, having enabled the land to support himself and to provide for the education of his children, leaves it to them a little better than he found it himself.*

Theodore Roosevelt, 26th President of the United States

Before we can effectively and efficiently farm land and produce a good crop, we have to understand the land being farmed. What type of soil does it have? What is its geology? What is the climate? All these things must be considered. At times, people have tried to grow the wrong crops in a place or use incorrect farming techniques only to find that the crops produced are poor quality with a low yield; the land loses nutrients, becomes exhausted, and can no longer produce; or soil erosion occurs. Using fertilizers to produce a better crop can potentially increase water and ground pollution, affect native wildlife, and increase the cost of production. However, by using fertilizers responsibly, farmers can improve their crop yield safely.

Early cultures didn’t have the knowledge to scientifically analyze what they were growing, they didn’t have the ability to easily import fertilizers, or acquire non-native plants to grow. If they lived near a river, they understood that the annual flooding may not be great for people and their homes, but it was great for making the land fertile and so they planted near the river. If they lived in a dry region, they knew they had to figure out a way to get water to the crops throughout the growing season and so irrigation systems were developed.

More advanced societies often were driven by market needs – they grew what people would buy, not necessarily what the land was best suited for growing. They didn’t always understand that the way they farmed affected the ability of the land to produce in the future. Sometimes they knew what they were doing would affect the future productivity of the land, but they didn’t really consider the consequences. Today, farmers are considering more and more how to best farm the land on which they live for today and the future.
**VOCABULARY**

**Organic** - produced with cultivation practices such as crop rotation, cover crop, and fertilization with properly treated crop and animal wastes.

**Conventional** – produced using pesticides, fertilizers, genetic modifications, or irradiation.

**Fertilizer** – any substance added to soil or water to increase its productivity.

**Pesticide** - a chemical preparation for destroying plant, fungal, or animal pests.

**Herbicide** - a substance or preparation for killing plants, especially weeds.

**Insecticide** - a substance or preparation for killing insects.

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**ACTIVITY: Produce**

Ask your students go to the grocery store and identify where the produce their family buys is grown. People don’t always think about whether the apples they are eating came from another state or country or whether they are locally grown; whether it is conventionally or organically produced.

**Curricular Areas:** Geography, Social Studies, Environmental Science, Personal & Social Perspectives, Life Science, People Places & Environments, Production Distribution & Consumption, Global Connections

**Follow-up discussion:**
- Where does the produce come from?
- How does it get to the store?
- What is involved in getting produce from a distance?
- What if it is locally grown?
- Why are some things from far away and other things local?
- Does the way it is produced or where it’s grown affect the price?
- Are there seasonal differences?

**Variations:**
- You can extend this activity to include other commonly bought food staples such as meat and dairy products.
- You can explore the difference between organic and conventional - What does it mean? Why is organic more expensive if it uses fewer
## PRODUCE CHART

<table>
<thead>
<tr>
<th>Product (what it is)</th>
<th>Type (vegetable, fruit, etc)</th>
<th>Place of Origin</th>
<th>Organic or Conventional</th>
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CASE STUDY: Coffee Cultural Landscape of Colombia

The Coffee Cultural Landscape is an exceptional example of a sustainable and productive cultural landscape. It is the result of the effort of several generations of campesino families who, for more than 100 years, have accumulated knowledge of how to adapt coffee cultivation to small plots of land and to the difficult conditions of their surroundings. They have created a strong, unparalleled cultural identity, not to mention having produced one of the finest coffees in the world.

— UNESCO World Heritage Site Nomination

The region in Colombia where coffee is grown is in the Andes Mountains. The traditional way of farming this region began to change in the 1960s. In this steep countryside, shade trees protect the coffee plants by preventing erosion and providing a safe haven for migrating songbirds, whose guano is a valuable fertilizer. However, shade-grown coffee, while ecologically more appropriate for this environment, is less productive than sun-grown...
In the 1960s, farmers tried a more technical approach to coffee growing. They switched to sun-grown farms with denser coffee plantings. This increased production, but with consequences. Without the trees, the migrating songbirds had to find new places to rest and no longer provided a natural fertilizer for the coffee plants. And, without the tree roots, farmers had trouble preventing soil erosion. After several decades, most coffee farmers are going back to the old way of shade-grown coffee. They have seen that their stewardship of the land means growing in the most environmentally responsible way, not necessarily the way that grows the biggest crop.

DISCUSSION & ACTIVITY: Environmental Factors & Plant Growth

Talk with your students about the differences between shade-grown methods and full sun growing methods.

Curricular Areas: Life Science, Science & Technology, People Places & Environments, Informational Reading

DISCUSSION:
• List characteristics of each.
• List pros and cons.
• Keeping in mind the definition of sustainable agriculture and its goal of preserving the land for the future, how does each type of coffee growing method fit the definition or not?

ACTIVITY: Environmental Factors and Plant Growth
Plant seeds and test to see what factors can effect plant growth.

Additional Activity: Visit the Smithsonian’s Migratory Bird Center, to learn more about how shade-grown coffee is helping to save migratory birds.
ENVIRONMENTAL FACTORS AND PLANT GROWTH

Supplies:

- Two pots, jars, or containers
- Potting soil
- Seeds for a plant of your choice (coffee plants if possible)
- Fertilizer – both powder or stick and liquid
- Coffee grounds
- Epsom salts
- Soap

Procedure:

- Fill each container with soil and plant the seeds according the directions on the package.
- Place one container in full sun (on a window sill or with a growth light) and the other in the shade.
- Water according to the seed instructions.
- Keep a journal and record what is happening to the plants in each pot.
- Once the grass is grown, begin to experiment with the plants to see how farmers can affect plant productivity.
  - Change the watering schedule. Water less frequently, then more frequently.
  - Add things to the water one at a time – such as fertilizer or soap – record what happens to your plants with each change. Make the additions one at a time over several days or a week so you can properly see how the plants are affected. Does it differ between the plants in the sun and those in the shade?
  - Add things to the soil one at a time – some common soil additives are fertilizer, coffee grinds, Epsom salts - record what happens to your plants with each change. Make the additions one at a time over several days or a week so you can properly see how the plants are affected.
- Report on your findings to the class.
Conservation of Resources

_Waste not, want not._
Benjamin Franklin

The average American creates 1,600 pounds (726 kg) of trash a year. How is it possible? One characteristic of an industrialized society is that people are more removed from the source of raw materials that are used to create the food, clothing, and other necessities of life. For example, has your family ever bought beets and thrown out the greens or had oysters and just thrown out the shells? How many of you have actually butchered the animal that you eat? Or sewn your own clothes, let alone woven the cloth from which those clothes are made? Large landfills and trash dumps show what happens when people lose their connection to the natural world.

Through _Protection, Preservation, and Prosperity: Stories of World Heritage_, we can see how connected early cultures were to their environment. The result is better use of resources and less production of trash. Today, industrialized societies are identifying more ways of re-using and recycling resources instead of creating more trash.

**DISCUSSION & ACTIVITIES: Recycling**

**Curricular Areas:** Environmental Science, Recycling, People Places & Environments

Lead a discussion with your students about how trash is produced. What can we do to start reducing our trash?

- Does your school have a recycling program? Have students identify what can be recycled.
- Have them create a plan for recycling in their homes or your classroom.
- Many artists today are re-purposing items that might be considered trash and turning it into art. Here are two websites where recycled art can be found: [http://museumca.org/helloagain/contents.htm](http://museumca.org/helloagain/contents.htm); [http://www.hongkiat.com/blog/recycled-art-masterpiece-made-from-junks/](http://www.hongkiat.com/blog/recycled-art-masterpiece-made-from-junks/). Ask your students to come up with ways we can re-purpose our trash into something useful.
Case Study: Agave

Agave Landscape & Ancient Industrial Facilities, Tequila, Mexico

Best known for making tequila, the blue agave was domesticated at least 2,000 years ago, but evidence shows that it was harvested long before that time. Tequila isn’t the only thing made from the agave plant:

• **Stalks** – dried, it is used in construction, and fresh, it is a lot like sugarcane and a sap can be extracted for cooking
• **Leaves** – pounded into a pup to make paper, thatched to make waterproof roofs, and the fibers twisted into strong cords; tea from the dry leaves is used as a medicine for digestion problems; sap from the fresh leaves makes a soap
• **Spines** – made into needles and arrowheads
• **Flowers** – used in cooking
• **Sap** – used in medicine and making beverages
• **Pina** – sap is used for making a syrup and beverages
• **Roots** – medicine for arthritis
Corn or maize is first thought to have been grown more than 5,600 years ago in Mexico, first by the Mayan and Aztec tribes. Originally a wild grain, cultivation spread when its versatility and nutritional value became known. For the Indians, corn was not just a valuable food source:

- **Husk** – used in cooking, making ribbons/ties, sleeping mats, baskets, dolls, and shoes.
- **Cob** - used to make darts, to burn as fuel, or made into ceremonial rattling sticks.
- **Silk** - medicinal and nutritional purposes, in particular to treat urinary disorders.
- **Leaf** - to make herbal tea and flavor beer, in cooking, a heating fuel
- **Stalk** – syrup, fuel, construction.
- **Kernels** – eating fresh, drying and grinding into a flour for cooking, used in animal feed.
DISCUSSION AND ACTIVITY: Conservation

Curricular Areas: Earth Science, People Places & Environments, Environmental Science, Botany

Discussion: Why do we throw out parts of plants that we could eat or use in some other way? The parts of agave and corn not used for eating are immediately used for other purposes. This is not recycling, but getting the most out of every resource, and wasting the least amount possible.

Field Trip & Activity:

• Is there a farm near you that grows corn? If possible, arrange a field trip to the farm to harvest fresh corn stalks. If a field trip isn’t possible, see if you can acquire the whole corn stalk, ears of corn and all, for use in your classroom.

• Shuck the corn and reserve the husks for making dolls. Instructions for making corn husk dolls can be found at http://www.nativetech.org/cornhusk/dollinst.html.

• Cook the corn and eat it. If the corn is dried, then use a mortar and pestle to grind the corn and use it to make corn bread.

• Use the stalks to build a piece of furniture. Have students design and build it. This can be a team or an individual activity.

• Follow-up with a discussion about what they accomplished and how they felt about it. Re-visit the discussion about recycling and garbage production. Did the activity give them new ideas of ways to reduce their own garbage production? What changes do they think could be made in their school and at their homes to accomplish this?
Sharing the Land

Conservation is a state of harmony between men and land. By land is meant all of the things on, over, or in the earth. Harmony with land is like harmony with a friend; you cannot cherish his right hand and chop off his left. That is to say, you cannot love game and hate predators; you cannot conserve the waters and waste the ranges; you cannot build the forest and mine the farm. The land is one organism. Its parts, like our own parts, compete with each other and co-operate with each other. The competitions are as much a part of the inner workings as the co-operations. You can regulate them—cautiously—but not abolish them.

Aldo Leopold

Biodiversity, or biological diversity, is a term used to refer to the variety of all life forms, and includes the different plants, animals, and micro-organisms; their genes and the
ecosystems of which they are a part.

The conservation of the Earth’s biodiversity is a huge task as it involves the conservation of all life on Earth. This includes the conservation of aquatic, marine, and temperate environments, and of micro-organisms. World Heritage conservation is an important component in the global effort to conserve the Earth’s biodiversity and is heavily reliant on collective international action.

**Ecosystem conservation** is also an important component of World Heritage conservation. Loss of biodiversity, particularly for threatened ecosystems (e.g. islands and wetlands) is usually irreversible, so there is ample reason to be concerned about threats to biodiversity and to act immediately to reduce them. In addition to protecting individual threatened species, conservation measures are generally more effective to ensure long-term sustainability of ecosystems, natural plant and animal communities, and landscapes as a whole.

Many World Heritage sites have been established to ensure the protection from extinction of threatened plant and animal species.

**DISCUSSION**

**Curricular Areas**: Earth Sciences, Environmental Studies, People Places & Environments, Informational Text

Discuss with your students what biodiversity is and the difference between endangered species and extinct.

- Can they name any endangered animals?
- Are there any endangered animals that are native to your region?
- What is the animal diversity in your region?
CASE STUDY: EVERGLADES NATIONAL PARK, Florida, US

Everglades National Park is the largest designated sub-tropical wilderness reserve on the North American continent. Its juncture at the interface of temperate and sub-tropical America, fresh and brackish water, shallow bays and deeper coastal waters creates a complex of habitats supporting a high diversity of flora and fauna. It contains the largest mangrove ecosystem in the Western Hemisphere, the largest continuous stand of sawgrass prairie and the most significant breeding ground for wading birds in North America.

The Everglades protect 800 species of land and water vertebrates, including more than 14 threatened species, 25 mammals, more than 400 bird species, 60 known species of reptiles, amphibians, and insects, including two threatened swallowtail butterfly species. More than 20 species of snake have been recorded, including the threatened indigo snake. More than 275 species of fish are known from the Everglades, most inhabiting the marine and estuarine waters. Several species are important game species that attract thousands of anglers (fishermen) to the park. During autumn a continuous procession of songbirds and other migrant species fly over or rest on these islands.
1905: "The murder of an Audubon warden, Guy Bradley, by poachers of flamingo
focused the indignant attention of the world on the bird plume industry".

1973: "Few people are aware that in spite of the environmental disruptions of the
past few decades, you can now see more herons and egrets in a day's drive
through southern Florida than you could have seen in a whole year back in 1905".

-- Archie Carr, The Everglades, 1973

UNESCO World Heritage Nomination

ACTIVITY AND DISCUSSION: Bird Conservation

Curricular Areas: English Language Arts, Literature, Environmental Studies,
Earth Sciences, People Places & Environments, Art

Activities:

• Have your students read She’s Wearing a Dead Bird on Her Head! by
  Kathryn Lasky (grades K-3) or Flying Blind by Anna Myers (grades 3-6).
  These books explore how conservationists reacted to the hunting of birds,
  in some cases to extinction, for their feathers to decorate women’s hats.
  Discuss the book’s theme with your students.

• Go bird watching around your school. Which birds are native to your area?
  How many can your students find?

• Have the class create a guide to the birds of your school. Using
  photographs and drawings by the students, create a guidebook to share
  with the rest of the school.

Sustainability in Urban Planning

Good urban design contributes to the creation of positive and vibrant communities.
It reinforces a sense of place, encourages neighbourhood interaction, and promotes
the development of functional and meaningful places for the community. Urban
Design…is a collaborative and multi-disciplinary design process that is concerned
with the formation of public space and its interface with the built form, focusing on
creating a desirable environment to live, work and play.

Planning Institute, Australia

As human beings began to develop unique cultures thousands of years ago, they moved
from place to place hunting and gathering the food they needed. They might find a cave to live in or create basic, temporary shelter of some form, which had minimal impact on the environment.

Eventually groups of people settled in a place. They began to grow crops, which meant they needed more permanent housing. These small settlements grew. Communities began to build institutions such as religious buildings, shops, and places of manufacture, from which villages grew. People were drawn to those villages and their populations grew even more. These large settlements are what we think of as urban centers or cities.

This very simple explanation of how people went from roaming the earth to building cities and imposing their needs on the land, explains how urban planning came into being. First there was no need for planning and once things got out of hand, people began to realize that a plan was necessary.

**VOCABULARY**

**Urban** – of or relating to a city or a town; area of dense population.

**Suburb** – a district lying immediately outside a city or town, especially a smaller residential community.

**Exurb** - a small, usually prosperous, community situated beyond the suburbs of a city.

**Rural** – living in the country: the rural population; of or pertaining to agriculture.

**Village** - a small community or group of houses in a rural area, larger than a hamlet and usually smaller than a town.
DISCUSSION

A discussion of urban planning must start with an identification of the place you live. What types of planning can be seen in your area? How would your students describe where they live - urban, rural, suburban, exurb? What is an exurb? The concept of an exurb is fairly new. It was identified because so many suburbs, which were developed to provide living places with central services still in the city, have developed their own central core. Not really cities, but more than the suburb they started out as, so they have been named exurbs.

Curricular Areas: Social Studies, People Places & Environments, Culture

Ask your students:
• What would they call their community?
• Is there a central core that provides essential services? What are essential services?
• What unifies their community?
CASE STUDIES: **Kakadu National Park, Australia**

Isolated from the rest of the world until man first arrived some 50,000 years ago, Australia was the home of a separate nature, where mammals had pouches to carry their young; some mammals even laid eggs. Kangaroos 3.5 meters tall bounded across the plains, chased by large saber-toothed "tigers". Giant flightless birds scratched in the desert for their living, and wombats the size of rhinos roamed the woodlands. The trees often shed their bark instead of their leaves, and great flocks of colorful parrots descended to feed on the grassy savannas.

Into this bizarre world came people migrating from southeast Asia, possibly under pressure from more modern people moving in from the north and west. Their trip through the Indonesian archipelago involved at least 8 sea voyages. Including one of at least 87 kilometers; what sort of vessel these ancient people used is unknown, as historical aboriginal cultures had nothing capable of braving the wild seas between Timor and mainland Australia. However they arrived, it is likely that the first Australians made their landfall somewhere around what is today Kakadu National Park. This area is the best example of a complex of ecosystems unique to northern Australia, providing an indication of how the continent looked to its first settlers. The spectacular scenery ranges from tidal flats to floodplains and majestic sandstone plateau and escarpments. Comprising 6,144
square kilometers in the Alligator River drainage, it is home to a third of Australia’s bird species and a quarter of the continent's fish species; of special interest is a primitive archer fish which is elsewhere known only from the Indonesian portion of New Guinea (an indication of the ancient links between Australia and its northern neighbor). Endangered species such as estuarine crocodile, chestnut-quilled pigeon, and hooded parrot find a secure habitat in Kakadu's rivers and forests, and a recently discovered python appears to be restricted to the stony escarpment country, as does a large gecko lizard.

Kakadu is not only an important habitat for Australian wildlife. It is also a fascinating homeland for Australian aborigines. Over 1,000 archeological and Aboriginal art sites have been identified, among them the site revealing evidence of the earliest human settlement in Australia and the world's oldest edge-ground axe. The art sites concentrated along the Arnhem Land escarpment represent outstanding examples of Aboriginal art. Some art sites feature representation of legendary heroes and were the scenes of regular rituals; other paintings were thought to bestow specific benefits to the groups responsible for their maintenance, such as bringing rain and increasing the supply of plants or animals. A few paintings depict species which are now extinct in Australia, such as the Tasmanian "Wolf" and the New Guinea species of spiny anteater. Several Aboriginal groups still live within the National Park, providing a vital link in the chain of human development worldwide.

—Jeffrey A. McNeely, World Heritage Site Nomination

CASE STUDY: M’Zab Valley, Algeria
The M'Zab Valley, located within the Sahara, 600 km south of Algiers, is the site of a unique group in a restricted area. Traces of very early settlement are to be found on the plateau and rocky slopes bordering this valley, which has been ravaged by rare and devastating flooding of the wadi. However, systematic occupation of the land and the adaptation of a strikingly original architecture to a semi-desert site date from the beginning of the 11th century and are the achievement of a group of human beings defined by clearly defined religious, social and moral ideals.

The Ibadis, whose doctrine in many ways achieved the intransigent purism of Khridjism, dominated part of the Maghreb during the 10th century. They founded a state whose capital, Tahert, was destroyed by fire in 909; they then sought other territorial bases, first at Sedrata and finally in the M'Zab. The site bears witness, in a most exceptional manner, to the Ibadi culture at its height.

The primary reason for choosing this valley, which until then had been inhabited only sporadically by nomadic groups, was the defensive possibilities that it offered a community that was concerned with its own protection and fiercely dedicated to the preservation of its identity, even at the expense of isolation. The occupation of the land and the organization of space were based on very strict principles and, in their precision and their detail, were exemplary in character. A group of five ksour (ksar: fortified village) - El Atteuf, Bou Noura, Beni Isguen, Melika and Ghardia - located on rocky outcrops housed a sedentary and
essentially urban population. Each of these miniature citadels, encircled by walls, is dominated by a mosque, whose minaret functioned as a watchtower. The three unchanging elements - *ksar*, cemetery, palm grove with its summer citadel - are found in all five villages. They serve to illustrate an example of a traditional human settlement, which is representative of a culture that has continued into the 20th century.

The mosque, with its arsenal and grain stores, was conceived as a fortress, the last bastion of resistance in the event of a siege. Around this building, which is essential to communal life, are houses built in concentric circles right up to the fortress walls. Each house, a cubic cell of standard type, illustrates an egalitarian ideal, whereas in the cemetery only the tombs of sages and the small mosques are distinguished in any way. The pattern of the life in the M'Zab Valley included a seasonal migration. Each summer the population moved to palm groves, where the 'summer cities' were marked by a looser organization, the highly defensive nature of the houses, the presence of watchtowers, and a mosque without a minaret, comparable with those in the cemeteries.

The settlement of the M'Zab Valley has exerted considerable influence on architects and city planners of the 20th century, from Le Corbusier to Pouillon.

— UNESCO World Heritage Site Description

Left: Traditional Architecture, Ghardaia, M'Zab Valley. Photo: Phr61 (CC BY).

Right: Ghardaia, Algeria: Melika, Cemetery-mausoleum of Sheikh Sidi Aissa
ACTIVITY

Curricular Areas: People Places & Environments, Individuals Groups & Institutions, Civic Ideals & Practices, Geography, Earth & Space, Physical Science

Ask students to explore the differences between Kakadu National Park and the M’Zab Valley. You can find more information about these sites at Preservation, Protection, and Prosperity: Stories of World Heritage or at UNESCO’s World Heritage Center. Using the chart, have the students identify environmental and societal factors that may have influenced the development of these two sites. Follow-up with a discussion about the differences and similarities. This activity will prepare students for the urban planning activity.

- In what way are these two cultures similar?
- How are they different?
- What are the factors that may have most influenced the development of their housing and communities?
- What are the similarities with the school’s community?

Variation - K-2
This activity can be done as a group discussion.

Illustration : Name: Melanotaenia splendid inornata. Drawn by Dorothea Schultz. From the American Australian Expedition to Arnhem Land,1949, National Museum of Natural History- Fishes Division, Smithsonian Institution 178294
<table>
<thead>
<tr>
<th>Geography</th>
<th>Kakadu National Park</th>
<th>M’Zab Valley</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Society Type</td>
<td>(hunter-gatherer, agriculture, industrial)</td>
<td></td>
</tr>
<tr>
<td>Movement</td>
<td>(do people move seasonally?)</td>
<td></td>
</tr>
<tr>
<td>Plants</td>
<td>(list types)</td>
<td></td>
</tr>
<tr>
<td>Animals</td>
<td>(list species)</td>
<td></td>
</tr>
<tr>
<td>Architectural Forms</td>
<td>(list single-family houses, apartments, caves, huts, sacred, commercial, industrial, etc.)</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td>(animist, polytheistic, monotheistic)</td>
<td></td>
</tr>
</tbody>
</table>
PLANNING A CITY

…urban planning or city and regional planning…works to improve the welfare of people and their communities by creating more convenient, equitable, healthful, efficient, and attractive places for present and future generations… Planning enables civic leaders, businesses, and citizens to play a meaningful role in creating communities that enrich people’s lives… Good planning helps create communities that offer better choices for where and how people live. Planning helps communities to envision their future. It helps them find the right balance of new development and essential services, environmental protection, and innovative change.

American Planning Association

Urban planning has been a discipline for centuries. Many ancient societies, including the Greeks and Romans, planned their cities taking into account the needs of a city:

- Water – living, washing, drinking, flushing
- Sanitation – a lot of people = a lot of refuse and trash
- Housing – how much land ÷ number of people
- Activities – commercial, industrial, governmental, religious
- Recreational – parks, theaters
- Infrastructure – roads, bridges, tunnels, sewers

In addition to the elements of urban planning, you need to keep in mind some of the principles of good urban design:

- Livability – does it make sense?
- Aesthetics – does it please or offend?
- Functionality – does it work?
ACTIVITY: Plan a City

Curricular Areas: People Places & Environments, Individuals Groups & Institutions, Civic Ideals & Practices, Geography, Earth & Space, Physical Science

Steps:

• Create a space for your city:
  o On a piece of paper decide how large your city will be - dimensions, acres/hectares
  o What are the land features - river, hills, plateaus, etc.
  o How many people do you plan to have living in your city?

• Identify the types of structures you need in your city and create a key for your city map so it will be easier to place them on the map:
  o What types of housing - apartments, single family, some combination? Think about how much housing you will need for the number of people.
  o Community structures - schools, recreational centers, government buildings, stores, etc.
  o Religious structures, cemeteries
  o Stores, factories, etc.

• Infrastructure - decide where your roads, bridges, public areas, and parks will be and place them in your city. Indicate water sources, but you don’t need to draw the sewer system as that would require an underground map. If you are industrialized, then you will need to show power sources as well.

• Place your buildings on your city map. Use the key you created if you need to.

• Give a presentation to the class about the city you have designed.
ACTIVITY – Document Your Community

Curricular Areas: People Places & Environments, Geography, Photography, Mapping, Social Studies, Public Speaking

Ask your students to document their community in photographs and words.

- To make it more manageable, divide your class into teams
- Divide your community into districts and assign a district to each team of students. You may want to only include the area within walking distance of your school or you can include your entire school district. You can make it a class decision.
- Have the teams of students go out and photograph their district. If you choose an area that is within walking distance of the school, this can be done as a field trip.
- Have each team organize their findings, choose the images they like the best, and write a description of their district. This should include descriptions of each building pictured, geological features, and infrastructure.
- Have the class combine their findings.
- Have a school assembly where the class can give a presentation to their parents or the school. Or create a book.
Sustainability in Landscape Design

*Landscape architects design the built environment of neighborhoods, towns and cities while also protecting and managing the natural environment, from its forests and fields to rivers and coasts. Members of the profession have a special commitment to improving the quality of life through the best design of places for people and other living things.*

American Association of Landscape Architects

We move in and out of designed landscapes every day, usually without realizing it. We have all been to parks and public gardens where it is obvious to us, as the visitor, that the place we are walking through was planned. We may not recognize that the roadways, school grounds, office buildings, and shopping centers we go to also have planned grounds, something that was specifically designed by a landscape architect. How public and private places are designed makes an impact on how we view the world around us.

**CASE STUDY: West Lake Cultural Landscape of Hangzhou**

*A Visit to Qiantang Lake*
By Bai Juyi

Gushan Temple is to the north, Jiating pavilion west,
The water’s surface now is calm, the bottom of the clouds low.
In several places, the first orioles are fighting in warm trees,
By every house new swallows peck at spring mud.
Disordered flowers have grown almost enough to confuse the eye,
Bright grass is able now to hide the hooves of horses.
I most love the east of the lake, I cannot come often enough
Within the shade of green poplars on White Sand Embankment.

The Chinese believed that a garden should be a place that provides tranquility and inspiration. It is a marriage of art and gardening and people.

ACTIVITY: Design a Landscape

Design a landscape that seeks to achieve the Chinese ideal of tranquility and inspiration. Students will use the instructions provided and will research native plant species and create a mapping key.

Curricular Areas: Environmental Studies. Earth & Space, People Places & Environments, Mapping, Writing, Speaking & Listening

Additional Activity:
Plan a field trip to a public garden in your community. Have students tour the garden and talk to the designer or gardener about the types of plantings chosen and why? How has the natural landscape been changed to create the garden or used in the design of the garden? Was there a philosophical or mission statement for the garden when it was created? Has it changed with time?
DESIGN A LANDSCAPE

Your task is to create a landscape that takes into account the geography of the land, natural features, native plant species, and aesthetics.

- Examine the map of the West Lakes garden from 1759 and the other examples of garden plans. This will help you to get an idea of how to draw a landscape.
- Decide what type of landscape you will be designing – a home, a neighborhood park, a shopping center – you decide.
- Create the plat for the land (a plat is a basic map of a piece of land) – what are its dimensions? If structures are on the land, you need to draw them in; if natural features are focal points (like a stream or a lake), you must place them on your plat.
- Name your garden. It can be as simple as “The Miller Garden” or more descriptive, such as “The Garden of Tranquility.”
- Write a brief description of what you want your garden to be.
- Identify the type of garden – will it be natural (uses the land to help guide the design) or formal (significant changes to the natural landscape to create a planned design)?
- Research the types of plants you wish to use in your landscape. What trees, bushes, flowers, and grasses? Is it a specific type of garden, such as a rose garden? What types of plants are native to your region?
- Create a key for your garden map. Use shapes or colors to describe what types of plants you will use. For example:

  = oak tree  = forsythia bush
  = daisies

Use color to identify specific types of plants or flowers or use different shapes to specific species of plants.
West Lake Garden Hangzhou
c.a. 1759.
From the Library of Congress.
Frederick Law Olmsted’s sketch plan for the grounds of the Schlesinger Estate, Brookline, Massachusetts, USA. 1904Collection of the Library of Congress

Herb Garden design. The designer used numbers to provide a key for the garden
plantings. Waleed Anwar. Creative Commons CC0 1.0 Universal Public Domain Dedication.
Design for the Royal Botanical Society Gardens in the Inner Circle
Regent's Park, London by Decimus Burton, 1840.
World Heritage in the Classroom and the School

No one person nor any single culture can develop without the interactivity of other people and cultures.
We must learn to recognize what each culture owes to all other cultures.
We ought to realize that cultural tourism could also be one of the most fertile and challenging means through which the dialogue between cultures and civilizations might be expressed.
To meet others also helps to appreciate one's own culture and heritage, and understand one's own natural environment.

Koïchiro Matsuura, Director-General of UNESCO, 2001

Heritage is often defined as our legacy from the past, what we live within the present, and what we pass on to future generations to learn from, to marvel at, and to enjoy. You may prefer to think of heritage as those places and objects we wish to keep. These are cultural and natural places and objects that we value because they come from our ancestors; that are beautiful, scientifically important, or irreplaceable examples and sources of life and inspiration. They are our touchstones, our points of reference, our identity. This heritage often reflects the lives of our ancestors and often survives today only because of specific efforts to preserve it.

Can you imagine your local area without heritage? Think about, for example, the places in which you and your students live. What represents the past, the present, and the future? What should be preserved? What could be replaced? What is irreplaceable?

The world includes both cultural and natural heritage. In your local region there may be archaeological, a church or sacred place, or a historic city. We call this cultural heritage. You may live close to a forest, or a magnificent coastal area. We call this natural heritage. This heritage is all immovable heritage (it cannot be easily moved). Heritage objects, such as coins, botanical samples, paintings, statues, or archaeological artifacts are movable heritage (they can be easily moved from one place to another).
DISCUSSION & ACTIVITY: World Heritage in Your School

Curricular Areas: Global Connections, People Places & Environments, Geography, Social Studies

Discuss: Why World Heritage sites have been identified and why we should find value in sites that are not in our own country. Why should we care?

Activity:

Research Project:

• Have your students choose a World Heritage site from the website http://whc.unesco.org/en/list.
• Each student should research the site.
• Then each student should create one of the following:
  o a poster
  o brochure
  o site model
  o PowerPoint presentation
  o Research paper about the site.
• Each project should include the following information:
  o Description of the site including where it is located, what kind of place it is, etc.
  o What were the criteria that were listed in nominating it to be a World Heritage site
  o What they think the value of preserving this site is
  o Photographs and a map of the site.
• Have each student make a presentation about the site they chose.

Variation: Plan a World Heritage event at your school.

• Display the student projects.
• Create a passport for your event.
• Have food from the different countries represented.
• Play music and games from the cultures represented.
Take A Field Trip

...every year millions...visit the national parks and monuments, the state and municipal parks, battlefield areas, historic houses publicly or privately owned, museums great and small--the components of a vast preservation of shrines and treasures in which may be seen and enjoyed the story of our natural and man-made heritage.

In most of such places the visitor is exposed...to a kind of elective education that is superior in some respects to that of the classroom, for here he meets the Thing itself--whether it be a wonder of nature's work, or the act or work of man. "To pay a personal visit to a historic shrine is to receive a concept such as no book can supply," someone has said; and surely to stand at the rim of the Grand Canyon of the Colorado is to experience a spiritual elevation that could come from no human description of the colossal chasm.

Tilden Freeman, "Interpreting Our Heritage"

Tilden Freeman could easily have been talking about any of the places featured in Protection, Preservation, and Prosperity: Stories of World Heritage or any of the places on the World Heritage List when he wrote about heritage interpretation. To experience a thing has an impact far greater than anything read in a book or seen in pictures.

Plan a field trip for your class to either a World Heritage site, if there is one in your area, or a national or state park or historic site. These sites usually have developed educational materials specific to that place. If not, you should follow a few steps to make the trip as much of a learning experience as possible.

Preparing for Your Field Trip

Have your students look at mages of the place. You should also discuss with them what they will be seeing and doing on their trip.

- Where are you going?
- What is the history of the place?
- What are the natural features? What animals might they encounter?
- Are there any stories about the place? Literature?

Be sure to prepare your students to be well-behaved visitors:

1. respect local cultures and traditions;
2. consider the privacy, culture, habits, and traditions of the host communities;
3. support the local economy by buying local goods and services;
4. contribute to local conservation efforts;
5. conserve and preserve the natural environment, its ecosystems and wildlife;
6. not disfigure cultural sites and monuments;
7. use energy and water, and dispose of waste, efficiently;
8. be careful with fire;
9. not make unnecessary noise;
10. use only designated roads and paths.

From General Behavior Guidelines for Tourists, Environmental Codes of Conduct for Tourism, United Nations Environment Program

During the Field Trip

Keep your students together and follow the rules of the site. Even if you don’t use a complete educational activity program, give your students something that will help direct their visit. A simple directed learning activity such as letting them know that they will be asked to talk or write about a favorite part of the place or one thing that they learned following the trip. You can also use the following activity sheet.

Following Your Field Trip

Have a discussion about what they saw on the field trip. Did you ask them to look for specific things before you went? This is a good time to go over that list. Have them write or talk about the thing they thought was most important about the site. Tie the discussion into other themes you’ve been teaching.
To be completed by each student prior, during, and directly after a visit to a site (preferably a World Heritage site).

Name of site ..............................................................................................................

Name of student .......................................................................................................  

Date of the site visit ...................................................................................................

Write down your expectations for the visit (what do you want to discover, learn about, etc):

Explain

During the visit

Make a drawing of a feature or part of the site which you particularly appreciate (use a separate sheet).

Record some facts and figures which you learned about the site:
Report on sensory discoveries: when you closed your eyes, describe what you heard, what you smelled, and describe the aspect of the site that made the biggest impact on you:

sound:.........................................................................................................................

smell:..............................................................................................................................

sight:..............................................................................................................................

After the visit

Were your site visit expectations fulfilled? □ yes □ no

Explain:

Why do you think that this site is important?

Final comments