WORLD HISTORY FOR US ALL

Big Era Two
Human Beings Almost Everywhere
200,000 – 10,000 Years Ago

LANDSCAPE

Landscape Teaching Unit 2.2
Language: What Difference Does It Make?
200,000-40,000 BCE

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Why this unit?

The core of this unit is the question: What makes human language different from animal communication? The question is important because that difference has made possible much that characterizes humans, from abstract thought to collective learning and rapid cultural change. Simple exercises, discussion questions, and an illustrated handout help students to construct and refine a hypothesis about the question they are investigating, both promoting and demonstrating their understanding of the lessons in this unit.

Unit objectives

Upon completing this unit, students will be able to:

1. Explain the key differences between animal communication and human language.
2. Relate the advantages of language to its short-range and long-range survival value.
3. Construct a hypothesis based on evidence, and revise it in the light of new information.

Time and materials

This unit will take 45-75 minutes. Actual time will vary with circumstances. If time is limited, the unit can be shortened by omitting the Introductory Activities.

Author

The principal author of this teaching unit is Dr. Anne Chapman. She served for many years as history teacher and academic dean of Western Reserve Academy in Hudson, Ohio. She has been a history education consultant to the College Board, the Educational Testing Service, and the National Center for History in the Schools. Dr. Chapman wrote the Student Handout in the Lesson based on published sources.

The historical context

We don't know when, or how, human language began. Scholars offer varying viewpoints that argue for the:

- sudden appearance of language about 50,000 years ago, perhaps by genetic mutation.
- gradual development of language through various changes at different times in basic ape communication abilities, starting with the Australopithecines 3,000,000 years ago or more.
- appearance of language as an ability exclusive to Homo sapiens and part of our genetic make-up, emerging at the same time as the species did between 250,000 and 100,000 years ago.

We do know that the following are associated with the beginnings of spoken language:

- The right brain size and structure.

- The right throat and mouth structure.
- A group of people (society) sharing a common set of symbolic meanings, and whose young learn these symbols and their meanings by imitation and adult feedback.

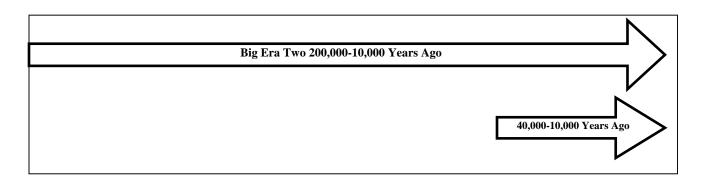But we can only know whether the above requirements for language were present:

- skeletal remains, which for some periods are scarce or often damaged or incomplete.
- from remains, such as tools or art, which give clues to behavior. We may ask: Could people have done this without language?

Most importantly, we know that language was of decisive importance for humanity. Language allowed humans to:

- build closer social bonds among wider groups.
- share knowledge and pass it on to new generations.
- spark ideas through discussion.

All these factors involved collective learning, of which only humans are capable.

This unit in the Big Era time line

Big Era Two 200,000-10,000 Years Ago

40,000-10,000 Years Ago

Introductory Activities (optional)

Ask students to solve the problem outlined in the scenario below, working in small groups.

- Tell them first that they have to do so without using language or pictures, and in only five minutes.
- After about five minutes, ask them to stop and tell them they may now use language and pictures to solve the problem, again in about five minutes.

Scenario (same for first round without the use of language, and the second round with the use of language):

> You are one of the few adult member of a small band of pre-language hominids.
>
> Recently, the weather changed in your territory and the large mammals you have been mostly living off of have disappeared. As a result, you are all hungry. You have noticed a lot of rabbits running around. They could solve the hunger problem if you and the rest of the band could decide how to get enough rabbits to feed all of your group. You have five minutes to work out with your group a scenario for getting enough rabbits.

Discussion questions

1. What difference did the use of language make in solving the rabbit problem above?
2. In what ways would developing language have survival-value for hominids? In what situations (students should identify 2-3) would language be of immediate, critical importance? In what situations (students should identify 2-3) would language be critical in the long range and not immediate importance?
3. How might a group of pre-language hominids develop language? How probable would you say each of your suggestions would be? Why? (Possible prompts might be: natural selection, mutation, trial and error, gradual refinement of an existing communication system, or a cultural invention.)
4. What are the differences between speaking language and drawing pictures? In what ways are these means of communication similar? Do pictures qualify as a "language?" Why or why not?
5. In what ways can people communicate that are considered visual (not spoken) and can be called "language"?

Lesson
What Makes Language Special?

Introductory activities

1. Ask students to brainstorm answers to the following questions, with the teacher recording their responses on the blackboard using grids such as those provided below:

    *   What pet animals can humans communicate with? Why can humans communicate with those animals and not other animals?

    *   What can humans say to their pets that they can understand?

    *   What kinds of things can pets communicate to humans that they can understand? Do pets try to communicate things to humans that they cannot understand?

    *   What kinds of things can pets communicate to other pets that they can understand? What can they not communicate to each other?

LIST OF PETS:	REASONS WHY PETS CAN COMMUNICATE WITH HUMANS:
1.	
2.	
x	

	HUMAN TO PET	PET TO HUMAN	PET TO PET
THINGS THEY CAN COMMUNICATE			
THINGS THEY CANNOT COMMUNICATE			

2. Ask students to place each of the following items in the appropriate slot on the second grid above as things that can or cannot be communicated human to pet, pet to human, or pet to pet:

threat	disagreement	bragging
description	negation	indicating past, present or future
questioning	bargaining	explanation
command	gossip	indicating certainty or uncertainty
persuasion	seduction	cheating

3. Which of the list above (starting with threat and ending with cheating) can humans communicate to other humans without using language?

4. In which 3-4 situations on the list would the use of language (as opposed to gestures or wordless sounds) have the greatest survival value? Why?

5. Ask students to use the information below about the ways various animals communicate to answer the following questions:
   - What conclusions would you draw based on the information given about the differences between animal communication and human language?
   - Which form of communication has the greatest survival value? Explain your answer.

Marmoset monkey:	Danger! Danger! Danger!
Vervet Monkey:	Leopard! Leopard! Leopard!
Human-taught ape:	Leopard Near Help
Human:	Sssssh! There's a sleeping leopard on the tree to the left, about fifteen feet away. Brumby, you help me get some stones for the sling, and Spike, you watch the leopard and holler if he wakes.

6. Extension or alternative activity: Ask students to discuss the following question: How could you tell that an attempt at communication by a newly-discovered species or an extraterrestrial creature was a "language"?

Before giving students the handout below, ask them to come up with a hypothesis (based on work done so far in this unit) that states the key differences between animal communication and human language. Ask them to keep the theory in mind as they read the handout. Having read it, they will be asked for ways in which the reading confirmed, contradicted, or suggested the need for changing their assumption.

Student Handout 1
What Difference Does Language Make?

All humans have language. All human languages can precisely express very complicated and abstract ideas, and give information about what is past, future, or invented.

Human babies will learn whatever language the adults around them are using. Verbal communication can be in the form of any one of the roughly 5,000 different languages now spoken in the world. Language can also be a communication of gestures, such as American Sign Language. Hearing, speaking, and seeing are not essential for learning and using oral communication. Helen Keller learned language through touch alone, and she was not the only one.

Human children who grow up in isolation without ever being exposed to language in any form do not have language. Those found young enough could learn language, but only by intensive training over years with the help of psychologists and language therapists. Language training failed with those who began it after they were about eight years old.
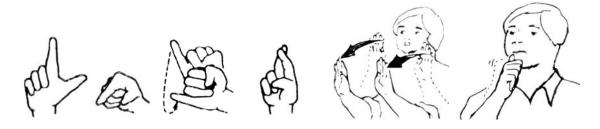
Apes who grow up isolated, never hearing or seeing one of their own kind, still grow up capable of making the calls and sounds typical of their species. But there are differences in the gestured signaling of chimpanzee bands living in separate regions in the wild. This suggests that at least some of their gestured communication signals may be learned rather than inherited.

Vervet monkeys in the wild have six different alarm calls, given when seeing a leopard, an eagle, a snake, a baboon, a human, or a smaller predator. Other vervets react to each call differently. For example, when a leopard call is heard, they run in among trees and perch themselves on a branch too heavy to bear a leopard's weight. For an eagle call, they look up and then hide among the bushes. Vervet babies make mistakes. For instance, they may give a leopard call for many different mammals (though never for eagles). As they get older, they learn accuracy.
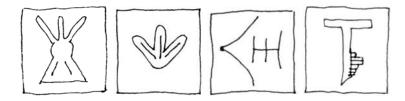
For a traveling chimpanzee troop, changes in travel directions or a rest period can be signaled by leaders drumming on tree trunks. Through gestures and sounds, chimpanzees can give different kinds of information to others of their kind.

Scientists have raised apes in human families, treating them like human babies and teaching them language. However, these apes did not learn how to articulate speech in a human language. Viki, an ape who was given seven years of intensive training, could say only "cup," "papa," and "mama." She could use these words correctly most of the time.

Other human-raised apes were taught American Sign Language, based on gestures. See the illustration below. After several years of training, Washoe, a chimpanzee and Koko a gorilla, had a reliable gesture-sign vocabulary of about 100 words. Very rarely, they used several words in sentence-like combinations, such as "you," "me," and "hide." These animals did not understand how to use the question mark, and they did not understand human voice communication.

Chimpanzees who are taught to communicate by using plastic shapes standing for words like "Sarah," or by a computer keyboard with arbitrary symbols standing for words (see illustrations) can learn a lot of language. Those who started learning at an early age did best. The most successful was Kanzi, a bonobo. He began to learn language almost at the time of his birth. By age seven, he had learned how to use over 200 words with consistent correctness. Kanzi used single words by far the most often, frequently combining them with gestures. Occasionally, he spontaneously used two or three-word combinations.

Tests suggest that Kanzi also understood about 150 words in English. He often used his keyboard to comment on things, tell about places where he wanted to go, and ask for what he wanted, along with answering questions. He seemed to have learned the grammatical rule that a verb came before a noun in combinations such as "hide peanut," "bite tomato," "tickle Kanzi," and followed the rule consistently. He and other human-taught apes were able to communicate with each other using the symbols they learned, but they did not do so spontaneously. Outside of experimental situations, they used body language with each other.

Humans also continue to use body language such as gestures, smiles, frowns, and hunching their shoulders. Parts of the brain that deal with these gestures are different from the parts that deal with making speech sounds and understanding of language symbols. Humans did not simply trade body language for word-based symbolic language. They use every means they can to communicate.

Watching a soap-opera on TV with the sound turned off, we can tell a good deal about what is going on. However, if we had to choose, there is not much doubt which mode of communication we would prefer to keep.

Discussion questions

1. In what ways did the reading confirm, contradict, or suggest the need for changing your hypothesis about the key differences between human language and animal communication?

2. What questions would you ask that would help you improve your hypothesis about the key differences between human language and animal communication?

3. What in the reading did you consider the most important information for the understanding of language? Why do you consider this information important?

4. What would an animal have to do for you to accept with no doubts that it had learned human language? In what ways could others argue that you are wrong, and how would you defend yourself against their arguments?

Activity (optional)

1. Design an experiment where the results would convincingly demonstrate that an ape has learned human language (not necessarily vocal). How might others argue that your experiment was not convincing? How would you answer their criticisms?

Assessment

1. Explain in what ways human language differs from animal communication.
2. Define the characteristics of human language. Take into account the information you gained from this unit on how language works, how it is acquired, what it can do, and what is needed for it to be present.

This unit and the Three Essential Questions

HUMANS & the ENVIRONMENT	How might a band of Homo sapiens living 50,000 year ago have used language successfully to drive a herd of deer into a swamp so that they could kill some of the animals for food?
HUMANS & other HUMANS	We do not know whether in the distant past all human beings spoke a single language, but as hunting and gathering bands migrated into different parts of the world languages diverged and multiplied. Why did thousands of different language eventually emerge? Is a language invariably changing, or can it remain mostly fixed? What are some words you use in English, Spanish, or another language today that did not exist a year or two ago? Why in the past few centuries has the number of languages in the world decreased rather than increased?
HUMANS & IDEAS	Language gave humans the ability to *explain* how a piece of technology worked without having to *show* how it worked. The key to success is that your listener shares with you the meaning of the words you use to make your explanation. Explain how one of the following tools works using words only. Do not name the tool or use any physical expressions or gestures: hoe, screwdriver, drill, or pulley. Why is this task hard or easy?

This unit and the seven Key Themes

This unit emphasizes:

Key Theme 5. Finding Identity

This unit and the Standards in Historical Thinking

Historical Thinking Standard 1: Chronological Thinking

The student is able to (C) establish temporal order in constructing historical narratives of their own: working forward from some beginning through its development, to some end or outcome; working backward from some issue, problem, or event to explain its origins and its development over time.

Historical Thinking Standard 2: Historical Comprehension

The student is able to (H) utilize visual, mathematical, and quantitative data presented in charts, tables, pie and bar graphs, flow charts, Venn diagrams, and other graphic organizers to clarify, illustrate, or elaborate upon information presented in the historical narrative.

Historical Thinking Standard 3: Historical Analysis and Interpretation

The student is able to (A) compare and contrast differing sets of ideas, values, personalities, behaviors, and institutions by identifying likenesses and differences.

Historical Thinking Standard 4: Historical Research Capabilities

The student is able to (A) formulate historical questions from encounters with historical documents, eyewitness accounts, letters, diaries, artifacts, photos, historical sites, art, architecture, and other records from the past.

Historical Thinking Standard 5: Historical Issues-Analysis and Decision-Making

The student is able to (E) formulate a position or course of action on an issue by identifying the nature of the problem, analyzing the underlying factors contributing to the problem, and choosing a plausible solution from a choice of carefully evaluated options.

Resources

Instructional resources for teachers

Boesch, C. and H. Boesch-Achermann. *The Chimpanzees of the Tai Forest*. Oxford: Oxford University Press, 2000.

Candland, Douglas Keith. *Feral Children and Clever Animals*. New York: Oxford University Press, 1993.

Christian, David. *Maps of Time: An Introduction to Big History*. Berkeley: University of California Press, 2004.

Davis, Kingsley. "Extreme Social Isolation of a Child." *American Journal of Sociology*, XLV, January 1940, pp. 554-565.

Deacon, Terrence. *The Symbolic Species*. London: Penguin Books, 1997.

Goodall, Jane. *The Chimpanzees of Gombe*. Cambridge, Mass.: Harvard University Press, 1986.

Hauser, Marc D. *The Evolution of Communication*. Cambridge, Mass.: The MIT Press, 1996.

Itard, Jean. *The Wild Boy of Aveyron*. Cambridge: Harvard UP, 1976.

Mithen, Steven. *The Prehistory of the Mind*. London: Thames & Hudson, 1996.

Ostler, Nicholas. *Empires of the Word: A Language History of the World.* New York: HarperCollins, 2005.

Pinker, Steven. *The Language Instinct*. New York: HarperPerennial, 1994.

Ruhlen, Merritt. *The Origin of Language*. New York: John Wiley & Sons, 1994.

Savage-Rumbaugh, Sue and Roger Lewin. *Kanzi: The Ape at the Brink of the Human Mind*. New York: John Wiley & Sons, 1994.

Correlations to National and State Standards and to Textbooks

National Standards for World History

Era One: The Beginnings of Human Society, 1B: The student understands how human communities populated the major regions of the world and adapted to a variety of environments.

California: History-Social Science Content Standards

Grade Six, 6.1.2: Identify the locations of human communities that populated the major regions of the world and describe how humans adapted to a variety of environments.

New York: Social Studies Resource Guide with Core Curriculum

Unit One: Ancient World – Civilizations and Religions (4000 BC – 500 AD), A. Early people, 3. Relationship to the environment, 4. Migration of early human populations.

Virginia History and Social Science Standards of Learning

World History and Geography to 1500 AD. Era 1: Human Origins and Early Civilizations, Prehistory to 1000 BC. WHI.2: The student will demonstrate knowledge of early development of humankind from the Paleolithic Era to the agricultural revolution.

Conceptual links to other teaching units

This lesson explored the question of what is special about human language. Language has enabled humans to engage in collective learning, that is, to share complex ideas with one another and to pass them on to children. The next Landscape Teaching Unit (3.1) investigates the domestication of plants and animals, the essential first step in the development of agriculture. Domestication around the world was successful only because humans could communicate the complex ideas and techniques that it involved.