

Virtual Field Trip Teacher's Guide

OVERVIEW

Welcome to a virtual field trip to the Anne and Bernard Spitzer Hall of Human Origins. This activity is designed for high school students to explore how the human lineage has evolved over time.

This activity is modular to give teachers flexibility in how they assign components to their students. The Virtual Hall Tour and Student Investigation are the core assignments. The extension activities are meant to provide opportunities for deeper student engagement.

Common Core State Standards:

W.9-10.2, W.11-12.1, W.11-12.2, RI.11-12.4, RI.11-12.7

New York State Science Core Curriculum:

LS4.A Evidence of Common Ancestry and Diversity

Next Generation Science Standards:

LS4.A Evidence of Common Ancestry and Diversity

CORE ACTIVITY

Virtual Hall Tour and Student Investigation

Students will use [Google Arts and Culture](#) to take a virtual tour of the Anne and Bernard Spitzer Hall of Human Origins starting with the three skeletons at the entrance. Ask students to explore the hall and find:

- The model of the *Australopithecus afarensis* couple walking arm-in-arm
- Four dioramas of hominins over time

Supports for synchronous instruction:

- After students have completed their worksheets, put them into jigsaw groups and have them share and discuss their findings.
- Assign each question to a breakout room (online teaching platform) or a table (traditional classroom) and allow students to move to each table/breakout room for targeted support or to share.

Supports for asynchronous instruction:

- Have students make a flip grid recording of their worksheet so that they can view each other's videos and learn about different
- Start a discussion board for the assignment so students can discuss their answers.

Instructional Modalities

This activity was designed for both synchronous or asynchronous instruction.

For **synchronous instruction**, we recommend a platform that allows both for whole class discussion and for students to interact in small groups.

For **asynchronous discussion**, we provide suggestions for teachers to provide additional video support for the activities and for students to share their work with each other.

EXTENSION ACTIVITIES

To deepen student engagement with this content, you may choose to add one or more of the following extension activities:

Virtual Lab Experience

To deepen student engagement with this content, you may choose to add a [Virtual Lab Experience](#) to explore Genetics or Human Evolution. These virtual labs include video tutorials and hands-on activities.

Reading Assignment

Students can prepare for their virtual visit by reading a non-fiction text about human evolution titled “Evolution: How It Works.” This reading can help introduce the topic or serve as a content refresher to help frame their investigation.

Supports for synchronous instruction: Student Reading

- As they read, have students annotate the text and write notes in the margin. For example, they could underline key passages, paraphrase important information, or write down questions that they have. They may also use this space for drawings or diagrams of what they are reading about.
- After reading, ask students to: (1) **Define variation and give an example. How does variation relate to evolution?** (2) **Identify two types of evidence that support evolution.** During discussion, remind students to use evidence from the text to explain their thinking, and to use specific examples.
Answers may vary, but should include: (1) Variation is the diversity of traits we see in organisms such as different eye color. (2) Types of evidence for evolution mentioned in the article: Fossil record, DNA evidence, direct observation, although this is not covered in detail.
- Then, have students create a venn diagram (such as a multi-columned T-chart) to compare and contrast fossil evidence to genetic evidence.

Supports for synchronous instruction: Student Reading

- Record a video of yourself reading “Evolution: How It Works.” This will allow students to pause or relisten to the reading so that they have time to take notes, paraphrase important information, or write down questions that they have.

Writing Task

This informational writing task asks students to draw on the reading and observations recorded during the virtual field trip, to synthesize what they learned about human evolution. The writing task should only be assigned as culminating work, if students have also completed the reading and answered the questions from the student investigation.

Student Writing Task

Based on your reading and your exploration of the Anne and Bernard Spitzer Hall of Human Origins to synthesize in writing what you learned about human evolution. Be sure to:

- define evolution and variation
- Using the reading, explain the physical and behavior changes that has occurred in the human lineage over time.
- describe the evidence that sports how we know these changes have occurred
- include a chart that highlights the major differences between humans and the other species.

Support your discussion with evidence from the reading and the Spitzer Hall of Human Origins.

Supports for synchronous instruction: Writing Task

- Re-read “Evolution: How It Works” with students. Ask what they saw in the hall that helps them understand human evolution.
- Allow time for students to read their essay drafts to a peer and receive feedback.

Supports for synchronous instruction: Student Reading

- Ask students to re-watch the video of the teacher reading of “Evolution: How It Works.” While they view it, ask them to write down how what they saw in the hall helps them understand how plate tectonics explains specific rock formations.
- Use [Padlet](#) so that students can share work with one another.

ANSWER KEY

Student Worksheet: Hall of Human Origins Virtual Tour

1. Locate the three skeletons at the entrance to the hall (Page 5). On the far left is a chimpanzee (*Pan troglodytes*), in the center is a modern human (*Homo sapiens*), and on the far right is an extinct species called Neanderthals (*Homo neanderthalensis*). The human and the Neanderthal share many features related to bipedalism (walking on two legs).

a. Compare the **human** and the **chimpanzee**. What similarities do you see? What differences do you see?

Similarities:

Students can make any similarities such as both have four limbs

Differences:

The chimpanzee has a larger brow than the human

The chimpanzee has opposable thumbs and humans do not

*The chimpanzee is bent over on all 4 limbs.
The human is bipedal and upright*

b. Compare the **human** and the **Neanderthal**. What similarities do you see? What differences do you see?

Similarities:

Examples include:

Both are bipedal and standing upright

Both have a prominent nasal bone

Differences:

Examples include:

The human is taller than the Neanderthal

The Neanderthal has a broader rib cage and broader hip bones than humans

The Neanderthal's legs are more bent at the knee than humans

ANSWER KEY

Student Worksheet: Hall of Human Origins Virtual Tour

2. Based on your observations, which species do you think is more closely related to modern humans (*Homo sapiens*)? Explain your answer.

Neanderthals are more closely related to humans because they are bipedal, walk upright, and have a similar skull structure to humans.

3. Observe the **Family Tree (Page 6)** . You should see several skulls organized from oldest (bottom) to most recent (top). This type of tree allows scientists to demonstrate evolutionary relationships among species. Displayed here are several species of early humans (also called **hominins**). On the top right is the skull of a modern human (*Homo sapiens*). As you look from the oldest species (bottom) to the most recent species (top) what changes do you notice in the shape of the skull?

As I look from the oldest to the most recent species, the cheekbones get more narrow, the brow gets smaller, the top of the skull gets smaller and more rounded, and the mouth and chin protrude out less.

4. Observe the diorama of *Australopithecus afarensis*. (**Page 7**) You should see a male and a female walking arm in arm. This is a hominin species that existed between 4 million and 3 million years ago. The most famous fossil of this species is named Lucy. In what ways are they similar to our own species? In what ways do they differ from our species?

Similarities:

Examples include:

bipedal and standing upright

Differences:

Examples include:

Australopithecus is shorter, has more body hair, and has a chin that protrudes out more than humans

ANSWER KEY

Student Worksheet: Hall of Human Origins Virtual Tour

5. Observe the diorama of *Homo erectus/ ergaster* (Page 8). You should see two individuals, a male and female, standing over an antelope carcass. This species existed between 1.9 million and 110 thousand years ago.

a. Describe the scene.

Descriptions are not limited to, but can include: description of the terrain, what can be seen in the background, the number of individuals, how their bodies are positioned, and if they are holding anything.

b. In what ways are they more similar to modern humans (*Homo sapiens*) than to Lucy's species (*Australopithecus afarensis*)?

The facial features are more human like: homo erectus appear taller than Lucy like humans. Their mouth and chin do not stick out as far and teeth are visible.

6. Observe the diorama of the neanderthals (*Homo neanderthalensis*) (Page 9). You should see three individuals draped in fur, a young male, a young female, and an older female. This species coexisted with modern humans (*Homo sapiens*) and lived between 400,000 thousand and 40,000 years ago.

a. Describe the scene.

Descriptions are not limited to, but can include: description of the terrain, what can be seen in the background, the number of individuals, how their bodies are positioned, and if they are holding anything

b. How does the environment differ from that of *Homo erectus/ ergaster*?

The environment of homo erectus appears to be more dry because of the brown grass, and ground covered with a mix of rocks and dirt. The Neanderthal environment has more trees and grass and a water source in the background.

c. In what ways do the Neanderthals differ physically and behaviorally from *Homo erectus/ ergaster* and *Australopithecus afarensis*?

Neanderthals look taller, and have longer hair on their heads. Neanderthals may be more social since they were in a group of 3. They might use more tools in unique ways since they are wearing and sitting on animal pelts.

ANSWER KEY

Student Worksheet: Hall of Human Origins Virtual Tour

7. Observe the diorama of the early European *Homo sapiens*. (Page 10) You should see a male in fur clothing carrying a bundle of sticks on his shoulders. Our species has existed from approximately 300,000 years ago to the present.

a. Describe the scene.

Descriptions are not limited to, but can include: description of the terrain, what can be seen in the background, the number of individuals, how their bodies are positioned, and if they are holding anything.

b. How does this scene differ from what you saw with the Neanderthals (*Homo neanderthalensis*) ?

*The Neanderthal scene had a cliff as well as grass and trees in the background. The Neanderthals were wearing animal fur, but their full bodies were not covered. European *Homo sapiens* are in an area with snow and a water source, but there is no grass or trees. They are also have on shoes and are covered from head to toe in fur.*

8. Based on your observations, what are some ways that the human lineage (hominins) have changed over time?

*Answers may include: Over time the human lineage has lived in different environments and terrains. *Homo erectus/ ergaster* lived in more dry conditions and early *homo sapiens* lived in more cold and wet environments. We changed from walking on all fours to being bipedal and walking upright. Our brows have become smaller, and chin and mouth point out less.*