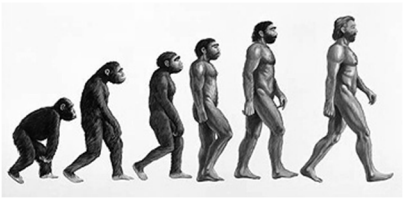
Name:_____

Human Evolution Lab

By Vicky Jordan – Wellington Middle School



Objectives:

1. Determine how scientists reconstruct fossils.
2. Evaluate hominid fossil evidence to determine a possible sequence of evolutionary changes.

Part 1 – Excavation

1. With your partner, use masking tape to piece together your ceramic "fossil."
2. Use clay to reconstruct the missing parts of your "fossil."
3. Sketch your completed artifact. Color in the clay "missing pieces" to help identify them.

Reflection:

A. What was easy about reconstructing your ceramic "fossil?"

B. What was difficult or challenging about reconstructing your ceramic "fossil?"

Pre-AP/Honors Question

C. Describe 3 possible, distinctly different reasons why pieces of a fossil might be missing when a paleontologist is excavating a site.

1. _____
2. _____
3. _____

Part 2 – Hominid Evolution

1. With your partner, evaluate the data on your cards, and try to match your cards with the correct hominid skull. Leave your card next to the skull when you think you have a match.

2. Look at the cards that other teams have placed. If you disagree with a placement, go ahead and move the card to where you think it belongs, but be ready to justify your reasoning.

3. When all the cards have been placed, stand next to the fossil that you would like to discuss. Listen to your classmates' arguments, and try to find flaws in their thinking that you can challenge.

4. Once all the cards have been placed correctly, and the skulls have been "lined up" in order by age, fill in the data chart below.

	Species	Brain Size	Location Found	Bipedal or Quadrupedal	Other Interesting Observations
1					
2					
3					
4					
5					
6					
7					
8					

Reflection:

1. Describe at least 2 evolutionary changes that are shown by the fossil evidence (bones and card information.)

_____

_____

_____

_____

Teacher Notes for Human Evolution Lab for Middle School Students:

Materials: Broken ceramics in baggies – enough for each team of two to have a baggie; masking tape for each team; clay or play-dough for each team; hominid skulls; laminated information cards and skull picture cards.

Safety Note: Warn students that there may be sharp edges on the ceramic pieces, so be careful not to cut themselves.

Set up for Part 1: Break a ceramic item (cup, bowl, figurine – can be purchased inexpensively at thrift stores.) Put most of the broken ceramic pieces in one baggie, and a few "hold out" pieces in a different baggie. Number each baggie with the same number so you can find the "match." Give the baggie with the largest number of pieces to a team of 2 students to work with. After they reassemble the pieces and reconstruct the missing pieces with clay, they can look at the "real missing pieces" to see if they inferred correctly.

Set up for Part 2: Before the lab, be sure to number the skulls (using a piece of tape) so the numbers match the key below. Put the skulls in order on tables or counters around the room with a number card at the table that matches the key below.

	Species	**Brain Size**	**Location Found**	**Bipedal or Quadrupedal**	**Other Interesting Observations**
1	*Proconsul africanus*	167 cc	Africa	4	*Skull card letter G*
2	*Pan troglodytes*	320-480 cc	Equatorial Africa	Both	*Skull card letter H*
3	*Astralopithecus africanus*	420-500 cc	Southern Africa	2	*Skull card letter C*
4	*Astralopithecus boisei*	530 cc	East Africa	2	*Skull card letter B*
5	*Homo erectus*	900-1100 cc	Africa, Asia, Europe	2	*Skull card letter D*
6	*Homo sapiens neanderthalensis*	1450 cc	Europe, Middle East, Asia	2	*Skull card letter E*
7	*Homo sapiens cro-magnon*	1350 cc	Europe	2	*Skull card letter A*
8	*Homo sapiens sapiens*	1350 cc	World-wide	2	*Skull card letter F*

Classroom Management Tips (80 minute block period):

Allow 15 minutes after directions for students to reconstruct their ceramic fossils. Even if they are not done, they can probably sketch what it will look like, and what some of the missing pieces would be. This will prevent some students finishing too early with nothing to do afterwards, and it will help students focus and work to a deadline.

Put "Table Number" cards with each species- match the table number with the same number as the species number on the chart (see answer key.) Line up the skulls in order by geologic age before students try to place the identification cards. DO NOT TELL THE STUDENTS that this is how the skulls are organized. Let them try to discover that. Only give about 5 minutes for students to place cards. Challenge the class that if all cards are placed correctly in the short amount of time available, there will be a class reward. This will encourage all students to be engaged and not just guess and drop the card at a table so they can go find their friends. If they are done checking cards, they should go to a skull that interests them, and work with others at that table to justify the placement of the cards. If appropriate, have a quick "whole class" discussion to allow students to justify the placement of the cards. At the end of the 5 minutes, have students return to their seats. Have students help re-place any misplaced identification cards at the correct table, then have them start filling in their chart starting with whatever table number they are sitting at. The patterns for the conclusion questions will become evident if they fill in the chart in order by table number.