

Human Evolution

Time: 50 minutes

Grade Level: 9-12

Adapted From: <http://www.indiana.edu/~ensiweb/home.html> (Go to this url, then click on Evolution Lessons, List of Titles, and Footprints in Time – use this document and the information provided in Footprints in Time to develop your lesson plan)

Objectives:

- Make and use observations of Laetoli footprints to provide clues to life in the past.
- Collect and analyze data to study the relationship between foot length and body height.
- Use the data on foot length and body height to estimate the height of Laetoli hominids.

Idaho Achievement Standards:

- 648.02a Know that observations and data are evidence on which to base scientific explanations.
- 648.02c Develop scientific explanations based on scientific knowledge, logic, and analysis.
- 649.01d Formulate and revise scientific explanations and models using logic and evidence.
- 652.01b Know that natural selection and its evolutionary consequences provide a scientific explanation for the fossil record of ancient life forms, as well as for the striking molecular similarities observed among the diverse species of organisms.
- 652.01c Know that the theory of evolution explains how different species of plants, animals, and microorganisms that live on earth today are related by descent from common ancestors.

Procedures (refer to ENSI website above for further information)

Note: Provide students with the Information Processing Form and the Experimental Write-up Form found on the following pages.

1. In your lab group, gather the following data and record it in the data table; foot length and height (all measurements must be in centimeters)
2. Plot your data on the transparencies.
3. Draw a best-fit line for the data.
4. Measure the foot length of the provided footprints.
5. Compare this with the scatter-plot graph. Extend the best-fit line if needed.

Foot length: distance from heel to toe (without shoe).

Height: distance from floor to the top of the head (without shoes).

INFO PROCESSING SHEET

Name _____ Partners _____

Topic Title:

Learning Objective Addressed:

Summary of Information and/or Data: (Must be a **paragraph** of at least three sentences. Tell what you **learned**, not what you did.)

Rate the likelihood that the Info-Data is accurate: 1 2 3 4 5 6 7 8 9 10 Justify your rating:

Questions relating to the Info-Data: (Must be complete sentences and should not be obviously answered in the activity.)

- 1.
- 2.
- 3.

Connections that link this Info-Data to OTHER Info-Data: (Only one connection can be linked to current studies. They must be about content, meaningful, and in complete sentences.)

- 1.
- 2.

Write a three-sentence summary discussing how this activity supported the learning objective stated above.

Name _____

EXPERIMENTAL WRITE-UP

Title: _____

I. Question:

II. Prior Knowledge and Assumptions:

III. Material List and Procedure:

IV. Hypothesis and Prediction:

V. Data Tables:

(provide a sample grid for data here)

VI. Graphs and Statistical Analysis:

(insert sample of graph paper here)

VII. Conclusion:

(provide several lines for this)

VIII. New Questions:

Evaluation (Take Home)

For homework, complete the Experimental Write-up and collect the same data from a minimum of three family members and/or friends. Does the new data correspond with the conclusions made in class?

What other similar relationships might be useful in determining the height of individuals? How are they relevant?

<http://www.indiana.edu/~ensiweb/lessons/footstep.html>