

Assignment Discovery Lesson Plan Out of Africa: The Real Eve

Subject

Life Science

Grade level

8-12

Duration

One or two class periods

Objectives

Students will

- review human evolution and migration from Africa; and
- make presentations showing different paths of human migration.

Materials

- Computer with Internet access

Procedures:

1. Review information about the human evolution and migration featured in the video. "Discovery Channel: Eve Explained" provides an online summary with background information; visit the Web site <http://dsc.discovery.com/convergence/realeve/feature/feature.html>. Below are questions to help lead the discussion.
 - Who is the Real Eve? (*a woman from whom all modern humans may be descended*)
 - Where and when did she live? (*Africa about 150,000 years ago*)
 - What is the scientific basis that a Real Eve existed? (*genetic tracking through mitochondrial DNA; new knowledge of climate and geographical changes*)
 - What is mitochondrial DNA (mtDNA)? (*the unique DNA found in the mitochondria of living cells*)
 - How is mitochondrial DNA passed through generations? (*Humans inherit it from their mothers.*)
 - How many years ago did the first hominids appear? (*3.5 million*)
 - When did this group of hominids migrate out of Africa? (*80,000 years ago*)
What was their migration route? (*across the Red Sea into what is now Yemen*)
 - What were the primary causes of the migration of hominid groups? (*climate and geography, such as polar caps, deserts, and volcanic eruptions*)
 - When did modern-day humans first migrate into what is now Europe? (*50,000 years ago*)
 - What hominids had been living in this region for hundreds of thousands of years? (*Neanderthals*)

- What caused humans to evolve into different races with unique characteristics? (*adaptations to different climates*)
2. Divide the class into seven groups. Assign each group a different time period of human migration (below). Tell students they will make a brief class presentation highlighting information about the time period.
 - 150,000 years ago
 - 80,000 years ago
 - 74,000 years ago
 - 70,000 years ago
 - 50,000 years ago
 - 20,000 years ago
 - 16,000 years ago
 3. Instruct each group to visit the interactive “Human Migration” map online (<http://dsc.discovery.com/convergence/realeve/interactive/migration.html>.) Each presentation should answer the following questions:
 - Where did humans migrate to and from during this time period?
 - What evidence proves that humans lived in that region during this time period?
 - What do we know about the way these people lived? What is the evidence?
 - How did climate changes influence these people?
 4. Have the groups present their findings, using a world map to show the migration paths during each period of time.

Evaluation

Use the following three-point rubric to evaluate students’ work during this lesson.

3 points: Students were highly engaged in class discussions; demonstrated a clear understanding of the concepts of human migration, mitochondrial DNA, and the Real Eve; gave a clear and thorough class presentation that answered all the assigned questions.

2 points: Students participated in class discussions; demonstrated an adequate understanding the concepts of human migration, mitochondrial DNA, and the Real Eve; gave a complete class presentation that answered most of the assigned questions.

1 point: Students participated minimally in class discussions; demonstrated an incomplete understanding the concepts of human migration, mitochondrial DNA, and the Real Eve; gave an incomplete class presentation that answered few or none of the assigned questions.

Vocabulary

DNA

Definition: The molecule that carries genetic information in all living things; the chemical basis of heredity

Context: DNA is located in the nucleus of living cells.

hominid

Definition: The family of erect bipedal primate mammals that includes modern humans (the species *Homo sapiens*) and Neanderthals and other related extinct species

Context: *Homo sapiens* is the only surviving hominid species.

migrate

Definition: To move from one region or climate to another

Context: Many scientists believe that our human ancestors migrated from Africa across the Red Sea.

mitochondria

Definition: Tiny structures in all human cells that have their own DNA called mitochondrial DNA (mtDNA)

Context: By studying mitochondria and mtDNA, some scientists believe that all humans may be descended from a single woman who lived in East Africa about 150,000 years ago.

Academic Standards

This lesson plan addresses the following standards from the National Science Education Standards:

- Life Science: Populations and ecosystems; Diversity and adaptations of organisms; Molecular basis of heredity; Biological evolution

Credit

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