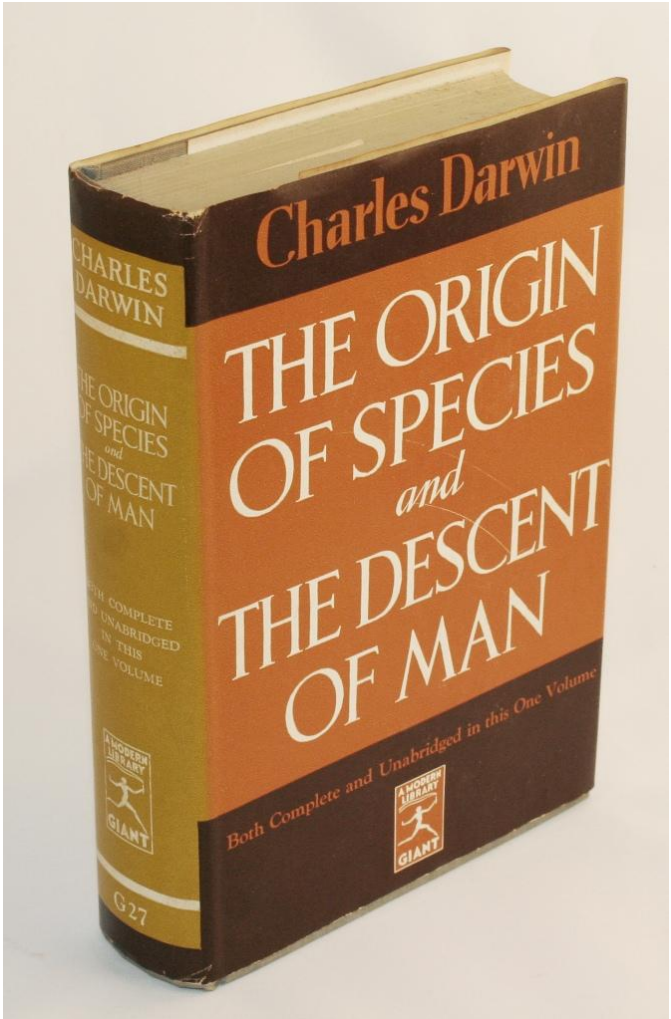
A tree of human evolution
THE ORIGIN AND FUTURE OF MAN

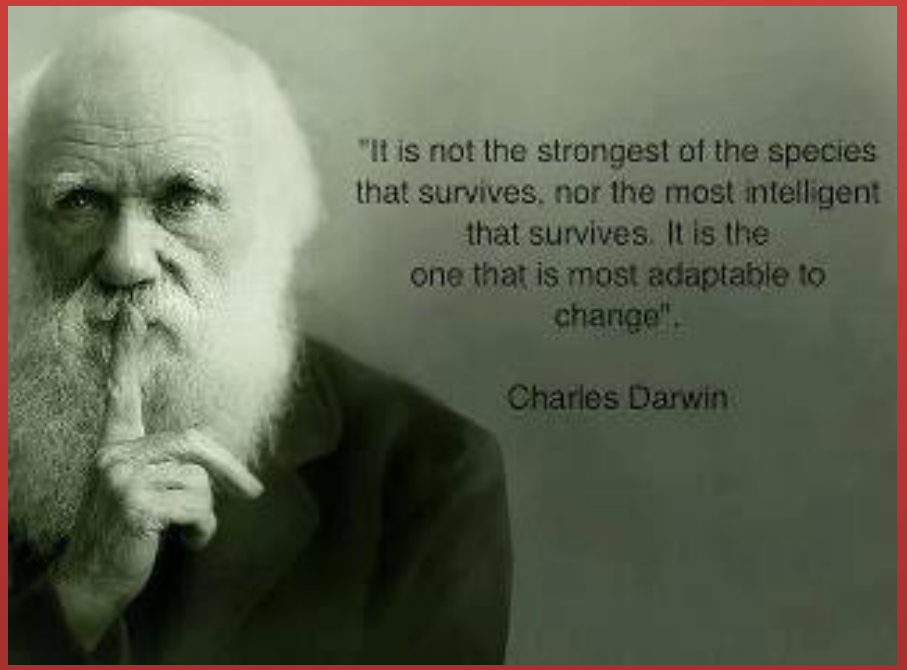


A NEED TO KNOW

- - Lamarckism
- - Natural Selection
- - Human ancestors tree
- - Traits of the different species (cronology, morphology, etc.)

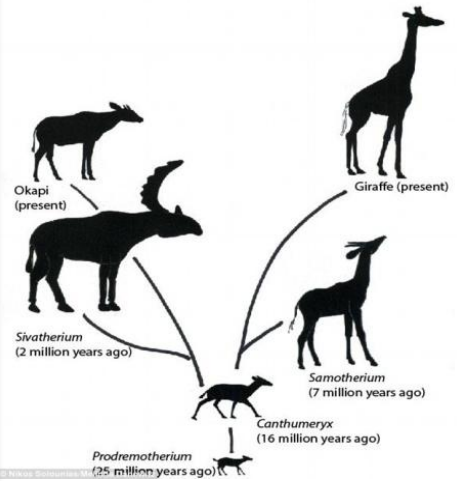
CALP

- Evolution
- Adaptation
- Use/non-use (function)
- Variation
- Struggle for life
- Scarcity of resources
- The fittest
- Heredity
- Technology
- Hand axe
- Culture
- Society
- Language
- Chronology
- Brain size
- Neocortex



ADVANCE ORGANIZER

- Show them pictures of an currently animal and its ancestor and ask them to tell the differences and how these differences have emerged.
- Show some skulls and ask them to sort them cronologically.

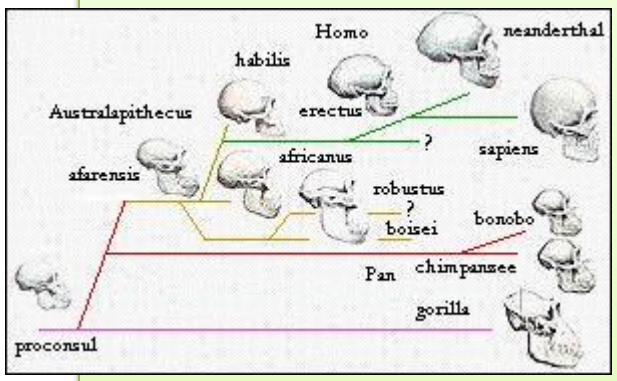


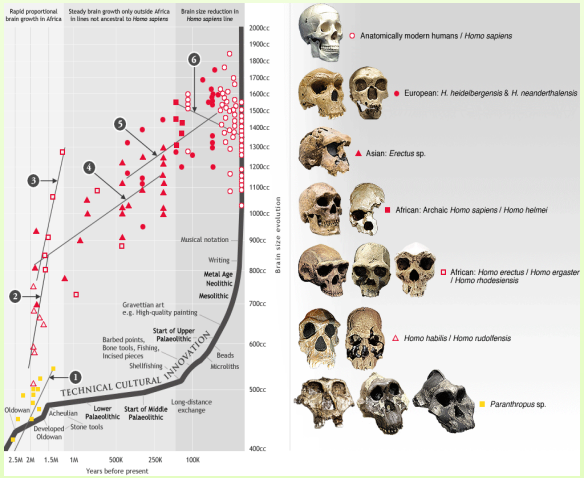
Driving Question

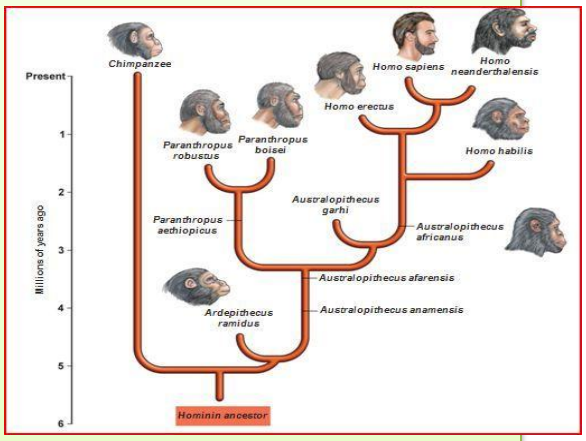
- *Where Do We Come From? What Are We? Where Are We Going?*

EXEMPLARS

DIFFERENT CHARTS TO
SHOW HUMAN EVOLUTION
(QUALITY AND COMPONENTS).







- Evaluate. Out of the different charts decide how you want to depict human evolution and introduce a reference to places and fossils found in Asturias, and prepare a leaflet (to hand out the people. Also we can pay a visit to the Oviedo Archeological Museum.

- Create a template in order to include the required information

HOTS

- ANALYZE. Showing different possible charts, analyze them and choose the one they like the most).
- EVALUATE. After analysing the students have to find out which one is the right one and explain the reasons, considering the information it should include having in mind the goal to be reached, a leaflet to hand out.
- CREATE. A tree of human evolution in which the development of the main traits of the different species can be seen clearly with references to Asturias (caves and fossils) and create a leaflet to be handed out to the people who visit the museum. For this: create first a template, and then a few drafts.

TASK-BASED-INSTRUCTIONS

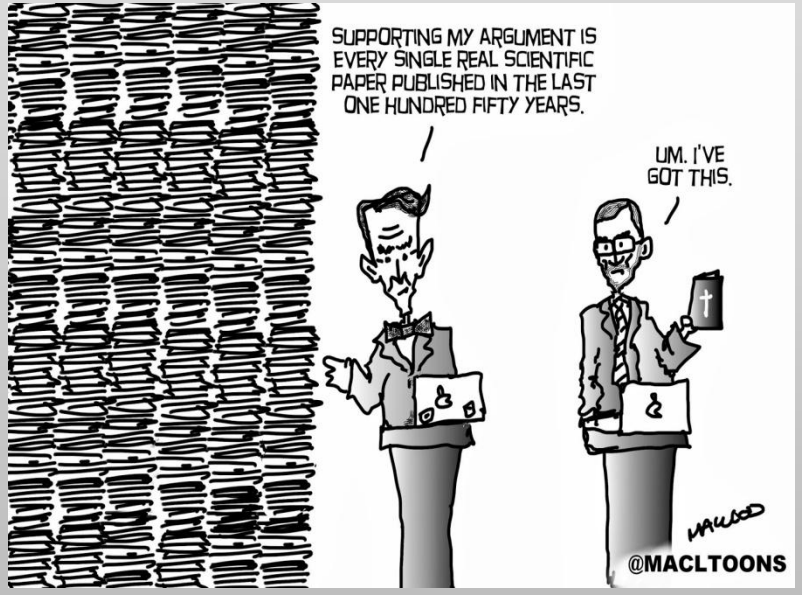
- Session 1.We want to know what is implied in an evolutionary change.
- Session 2. How does evolution work? How can new species appear.
- Session 3. Starting the Project. Introducing the concepts of Evolution and Adaptation.
- Session 4. Active Adaptation: lamarckism
- Session 5. Passive Adaptation: Darwinism
- Session 6. Evolution of man(1). Species, chronology, places (fossils)
- Session 7. Evolution of man (2). Anatomical evolution and habitats
- Session 8. Evolution of man (3). Emergency of culture (lithic technology and societies)
- Session 9. Next step on evolution. The future of man
- Session 10. Final project

INQUIRY AND INNOVATION (teaching sequence)

- Session 1. Has God created us? If It hasn't, then who has created man?
- Session 2. What does to evolve mean?
- Session 3. What means do living things use to survive?
- Session 4. How do we adapt to different environments? Why do jiraffes have become to get such a long neck?
- Session 5. Some animals that live in deep caves where there is no light do not have eyes. Why? But their ancestors did have eyes, how did they lose them?
- Session 6. Where have fossils been found? What traits do they show?
- Session 7. Darwinism claims that our ancestors evolved due to changes in their environments. What were the habitats in which human evolution took place?
- Session 8. Where can the line that splits humans from animals be drawn?
- Session 9. Where do you think cultural evolution can lead humanity?

INQUIRY QUESTIONS
COOPERATIVE LEARNING (1)

- Session 1. Has God created us? If It hasn't, then who has created man?
- In groups of four, the students should try to explain the existence of fossils from a creationist and from an evolutionist point of view. Then share to the others. Cooperative Learning = Structure Problem Solving
- → Presentation: images of fossils
- → Practice (task): write hypothesis about their origin
- → Performance (share): communicate their explanations



INQUIRY QUESTIONS
COOPERATIVE LEARNING (2)

- Session 2. What does to evolve mean?
- Session 3. What means do living things use to survive?
- Session 4. How do we adapt to different environments? Why do jiraffes have become to get such a long neck?
- Session 5. Some animals that live in deep caves where there is no light do not have eyes. Why? But their ancestors did have eyes, how did they lose them?
- In groups of four, the students work with examples of morphological characters and then they have to give a larmarckian and a darwinist explanation.
  Cooperative Learning = Think Pair Share
- → Presentation : give them the examples
- → Practice (task): think about a possible lamarckian and darwinist explanation.
- → Performance (share): communicate their explanations

INQUIRY QUESTIONS
COOPERATIVE LEARNING (3)

- Session 6. Where have fossils been found? What traits do they show?
- Session 7. Darwinism claims that our ancestors evolved due to changes in their environments. What were the habitats in which human evolution took place?
- In groups of four, the students show images of the different environments in which the human ancestors developed. Cooperative Learning = Jigsaw
- → Presentation : tell them the name of the habitats
- → Practice (task): look up information and pictures for each one of them
- → Performance (share): presentation to the rest of the class

INQUIRY QUESTIONS
COOPERATIVE LEARNING (4)

- Session 8. Where can the line that splits humans from animals be drawn?
- Session 9. Where do you think cultural evolution can lead humanity?
- In groups of four, the students make a presentation of different views related to the future of the human society, choosing different times of the future. Cooperative Learning = Think Pair Share
- → Presentation : talk to them about the evolution of culture and technology
- → Practice (task): they think about the future evolution of technology as a driven force for changing the human societies, and write a picture of the coming human socities in let's say 50 /100 /150 years ahead.
- → Performance (share): presentations of their views

- PROBLEM: Would Artificial Intelligence end up taking over human jobs?

CHECKLIST FOR TREE OF HUMAN EVOLUTION

- Exemplars – Hots – Template
- Task 1. Show different charts.
- Task 2. Show different species to appear in the chart.
- Task 3. See places in Astrurias where human fossils can be found.
- Task 4. Relate these places with the different species.
- Task 5. Decide which chart is fit so as to include the required information.
- Task 6. Create the chart.
- Task 7.Show and share the chart.

BENCHMARKS AND CHECKLIST FOR TREE OF HUMAN EVOLUTION

- Created a “template” with species of hominids and asturian places where their fossils can be found.
- Completed the chart with the required information: right places – right species.
- Quality and creativity of the charts (visual impact and clarity).
- Showed and shared the different charts, having given explanations when necessary.

GRADING RUBRIC

RUBRIC: IPAD PRODUCT

STUDENT: _____

SCORE: _____

CRITERIA	EXEMPLARY (4 POINTS)	PROFICIENT (3 POINTS)	NOT YET PROFICIENT (2 POINTS)	INCOMPLETE (1 POINT)
CONTENT	The content is written clearly and concisely with a logical progression of ideas and supporting information. The content gives the audience a clear sense of the key concept.	The content is written with a logical progression of ideas. The content has accurate and useful information.	Information is present but the main idea is vague. Some of the information doesn't seem to fit and the progression of ideas is unclear.	The content lacks a clear point of view and logical sequence of information. Information is incomplete and/or incorrect.
WRITING PROCESSES	Clear, concise, and well written with no errors. Grammar and usage are correct with correct punctuation.	Clear, concise, and well written with minor errors with grammar and usage.	Product structure is missing. Many errors containing grammar, punctuation, and spelling. Product needs editing.	Product needs extensive editing. Multiple errors in grammar, punctuation, and spelling. Product is difficult to understand.
LAYOUT	Product looks professionally done. The layout is visually pleasing and contributes to the overall message. Product uses headings, fonts, colors, and text that enhance readability.	Product is visually pleasing and is formatted well. Headings, fonts, colors, and text are used appropriately	Product shows some structure but appears cluttered or distracting. The overall readability is difficult with inappropriate use of headings, fonts, colors, and text	Product is extremely difficult to follow. The layout is confusing and the use of headings, fonts, colors, and text are ineffective.
Graphics	Graphics assist in presenting an overall theme. Graphics enhance understanding of concepts and ideas.	Graphics visually depict material and assist the understanding of content	Some graphics are unrelated to the product and do not enhance the overall concepts. Graphics are poorly designed and/or confusing.	Graphics are completely unrelated to the concept. Graphics do not enhance understanding, are distracting, and create confusion.