

Topic: Comparative Anatomy Project

Summary: Students learn about the anatomy of an animal and compare it to the anatomy of a human. This project is to supplement your normal teaching about the human body.

Goals & Objectives: Students will be able to work in a group to solve a problem. Students will be able to understand many systems of human anatomy and physiology.

Standards: CA Biology 9: A, B, E, F*, G*, H*.

Time Length: Approximately 6 hours of work + time to present comparison to the class.

Group / Individual Work: You can choose to have students work as a group in class or have each student work by themselves at home. If at school, students will have time in class to work with their partner. Partners can discuss ideas, concepts, analogies, and supporting evidence. Both partners work on research, design and construction of the poster together.

Procedures:

1. The first day of the project, introduce what the students will do. Then have the students pick number 1 – 100 as you secretly write a number hidden on the board. Students closest to your number can choose to do an invertebrate, fish or amphibian, reptile, or a bird. No one can have the same animal in any of your classes. Students are to choose down to the specie.
2. It is best to provide library books, textbooks and zoology textbooks in class if students are to work on the project in class. This lets a good book to be used by multiple students. If the students work on it at home, schedule one day for students to go to the library to research on the internet and check out books.
3. If you work on the project in class, have students work on the body system you are currently teaching. Example, students should be working on the circulatory system portion of the comparison while you are teaching the human circulatory system. Students will need to bring a tri-fold poster and you can supply color pencils, markers and tape.
4. The day of the presentation, students may not read from a poster or note cards and the presentation should not last longer than 5 minutes max.

Accommodations: Students with an IEP can write fewer sentences in a paragraph. English language learners should be partnered with a student who is strong in English.

Evaluation: 100 point assignment. See rubric.

Comparative Anatomy Project

Objective: Your goal is to compare an animal to the human body. Your final product is to create a science fair style poster and present your comparisons to the class.

Due Date: Both the poster and presentation is due _____.

Animals: Your group will be assigned one of following categories of animals: invertebrates, fish and amphibians, reptiles, and birds. Your group will chose any animal from this category but cannot be the same specie as any other group.

The following are examples you can use but are not limited to the following examples.

- Invertebrates: annelids (worms), mollusks (snails, clams), arthropods (spiders, insects, grasshoppers), echinoderms (star fish).
- Fish and Amphibians: (trout, sea horse, shark, frogs, salamander).
- Reptiles (turtles, bearded dragons, snakes)
- Birds: (bald eagles, ducks, finches)

Poster: Your poster will consist of the following five items:

- Human anatomy - 6 human organ system paragraphs
- Human anatomy – 6 hand drawn colored pictures of each system
- Animal anatomy - 6 animal paragraphs explaining how the how their organ is different to the human's system
- Animal anatomy – 6 drawn colored pictures of each system
- Animal background - one taxonomy list and three ecology paragraphs

Human Anatomy Paragraphs: Write a paragraph about each human body system. Each paragraph will contain a sentence per part of the system. The sentence should explain the purpose and function of the part. Example; the human digestive system paragraph will have at least nine sentences.

- Digestive system : mouth, salivary glands, esophagus, stomach, small intestine, liver, gallbladder, pancreas, and large intestine (colons, rectum).
- Excretory system : kidneys (nephrons), ureters, urinary bladder, and urethra.
- Respiratory system : nose (nasal cavity), pharynx, larynx, trachea, bronchi, alveoli, respiration and the diaphragm.
- Circulatory system : double loop (pulmonary circulation, systemic circulation), the flow of the four chambers of the heart, heartbeats, blood vessels (arteries, capillaries, veins), and blood (plasma, hemoglobin, platelets).
- Nervous system : cerebrum, cerebellum, olfactory bulb, optic lobe, medulla oblongata, and spinal cord.
- Locomotion (muscular and skeletal system) – axial and appendicular skeletons, cartilage, joints (ligaments), skeletal muscle example, smooth muscle example, cardiac muscle example, and tendons.

Animal Anatomy Paragraphs:

Write a paragraph for each of the same body systems as a human. Write one sentence on the system parts that are the same between your animal and humans. The rest of the paragraph focuses on how the animal's system is different from a human's system.

Animal Background:

1. Create taxonomy from kingdom to species of your animal.
2. Describe the ecological habitat, food chain, and mating behavior.

Requirements:

- All information is handwritten, easy to read standing 3 feet away, all content is on the one side of the poster, and about 50% of the poster is graphics.
- Poster must be a large tri-fold.
- Include a bibliography with a minimum of three references in correct format.

Presentation: Both partners equally speak. See rubric for grading.

Grading: This is a 100-point project.

Comparative Anatomy Rubric

	Beginning	Novice	Proficient	Excellent	Grade
Poster Content	Missing four or more content items, incomplete, below basic explanations or did not contribute much. 20 Points	Two - three items missing in the content section, basic explanations of the content, or did not follow all the requirements. 30 Points	One item missing from the poster or a good comprehension of anatomy and physiology. 35 Points	All content was thoroughly included, advanced comprehension of anatomy and physiology. 40 Points	
Visual Aide & Graphic Design	Incomplete or two or more items missing from proficient or did not contribute much. 20 Points	One item missing from proficient. 30 Points	Visual aide is large tri-fold, 50% graphics, each body system for both has a graphic, and organized design. 35 Points	Everything in Proficient. Hand drawn colorful graphics or professional looking color printed 40 Points	
Presentation	Student did not convey he/she understood what he/she was talking about. 5 Points	Student describe some of the poster and demonstrated some knowledge of human and animal anatomy, or sometimes looked at the audience. 10 Points	Student described most of the poster and demonstrated a good knowledge of human and animal anatomy, looked at the audience, and shared equal parts. 15 Points	Student described everything and demonstrated a thorough knowledge of human and animal anatomy, share equal parts, looked at the audience, and project their voice. 20 Points	
				Total Points =	