LEARNING ACTIVITY SHEET
GRADE 10-SCIENCE

Name: _____ Date: _____ Rating/Score: _____

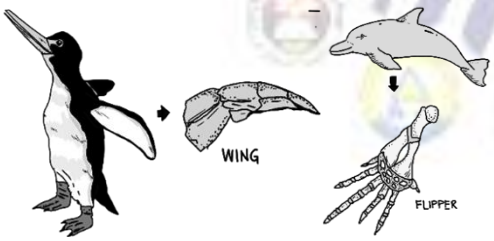
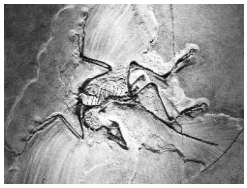
BIODIVERSITY AND EVOLUTION

DIRECTIONS: This Learning Activity Sheet is about the evidence and occurrence of evolution through the ideas of Lamarck and Darwin. Follow the instructions in each part and answer the guide questions that follow.

Part A: We Are Family

Homologous structures are structures that are similar in related organisms while analogous structures are those that are similar in unrelated organisms.

Write **HOMO** if the pictures show **homologous structures** and **ANA** if they are **analogous structures**. Then write the functions for each pair of structures.

Structure	Type	Functions
1) 		
2) 		
3) 		
4)   Wings of *Aurorazhdarcho micronyx* Wings of *Archeopterix*		

Illustrated by: Mrs. Mary Rozelle D. Ilagan

Specific Weeks: 5-6 (LAS 3)
Target Competency: Explain how fossil records, comparative anatomy, and genetic information provide evidence for evolution (S10LT-IIIf-39)

Think About It!

1. Which pair of animals in numbers 1-3 belongs to a common ancestral group? Explain your answer.

2. Fossils and anatomical records both provide pieces of evidence of evolution. How do you determine the age of fossils of an *Aurorazhdarcho micronyx* and an Archeopterix?

Part B: Oh My Cytochrome!

Cytochrome c is a protein found in mitochondria, and is used in studying the evolutionary relationships of animas. *Human cytochrome c* and *chimpanzee cytochrome c* are identical in all 104 amino acids. Our close relationship with chimpanzees is revealed by this high degree of resemblance.

Below is a list of the differences of amino acid between the animals and the human cytochrome c. Refer to the table below in answering the questions.

Animal	**Number of Amino Acid Differences Compared to Human *Cytochrome c***
Horse	12
Tuna	21
Rattlesnake	14
Monkey	1
Turtle	15
Pigeon	12

Think About It!

1. Based on the given table, which organism is most closely related to humans? Which organism is least related to humans?

2. Do any of the animals have the same number of differences from human *cytochrome c*? In this situation, how would you decide which is more closely related to humans?

LEARNING ACTIVITY SHEET
GRADE 10-SCIENCE

Part C: Theories of Evolution

A. Lamarckism

Lamarck was a French naturalist who worked in the vertebrate animal collection of the Natural History Museum of Paris. Using fossil records as his reference, he developed three theories namely: ***Theory of Need***, the ***Theory of Use and Disuse***, and the ***Theory of Acquired Characteristics***.

For each box, write a short description and illustrate each theory.

Description	Illustrations
Theory of Need	
Theory of Use and Disuse	
Theory of Acquired Characteristics	

Specific Weeks: 5-6 (LAS 3)
Target Competency: Explain the occurrence of evolution (S10LT-IIIg-40)

LEARNING ACTIVITY SHEET
GRADE 10-SCIENCE

B. Darwinism

Darwin established a theory of evolution based on *variation*, c*ompetition*, and *survival* in the living world by studying careful observations made on a sailing trip around the world. He developed his knowledge during the voyage of the Beagle. In his book ***"The Origin of Species"*** Darwin put forth two main concepts: *evolution* and *natural selection*. Evolution is a change in a population over time. The alteration in an organism's population was explained by natural selection, the mechanism for evolution. It includes the influence of the environment on the collection of useful inheritable characteristics known as an adaptation as well as the struggle for existence.

Organize your thoughts about Darwin's ideas of evolution by filling out the concept map below.

Check your understanding by answering the questions below.

1. Which among the Theories of Evolution is more sensible to you? Why?	
2. Enumerate below the strengths and weaknesses of the two Theories of Evolution.	
Lamarck's Theory	Darwinism Theory

Specific Weeks: 5-6 (LAS 3)
Target Competency: Explain the occurrence of evolution (S10LT-IIIg-40)