PENANG SANGAM HIGH SCHOOL
P.O.BOX 44, RAKIRAKI

LESSON NOTES

WEEK 16

Year/Level: 13A/B **Subject:** BIOLOGY

Strand	1 Structure And Life Processes
Sub Strand	1.2 Human Evolution
Content Learning Outcome	Describe the different aspects of cultural evolution

TOOL CULTURES

- ✓ *Homo habilis*- **Oldowan** tool- pebble tools- side knocked from several angles to produce a cutting edge.
- ✓ *Homo erectus*.- **Acheulean** tool-'tear drop' in shape and were carefully with a slight bulge on each broad surface called a 'bi-face'. The main product of this culture was the hand axe.
- ✓ *Homo sapien Nienderthals*- **Mousterian** tool- flint- sharper edges and better control over the way the rock would flake.

Tools	Hominids
Oldowan	*Homo habilis*
Acheulean	*Homo erectus*
Mousterian	*Neanderthal man*

THE BEGINNING OF AGRICULTURE

- Domestication of animals preceded that of plants. The advantages of keeping animals alive for a time before killing them meant;

1. Meat would be available whenever it was needed.
2. Animals would be killed at the optimum age
3. Animals could also be used as a source of milk

- The **first animal** to be domesticated was probably the **dog** (hunting). Other animals domesticated were sheep, goats, cattle, pigs, and camel.

- Domestication of plants occurred later. Some plants domesticated were barley (first), wheat, legumes (beans), maize, and cotton (for wool).

Advantage of Domesticating Animals:

- **Meat available as food throughout the year (No need to go hunting)**
- **Domesticated animals helped in farming**

Disadvantage of Animal Domestication:

- **Loss of animals natural defensive ability**
- **Domesticated animals have no free-will; have to live, work, eat etc according to the owner**
- **Excessive domestication can lead to the danger of extinction of species (eg. certain species and gender preferred over other)**

Advantage of Plant Domestication:

- **help sustain steady and reliable production to food**
- **stops depleting the natural forest stocks**
- **facilitate easier collection and harvesting**

Disadvantage of Plant Domestication:

- **Increased species susceptibility to pests and diseases (particularly in monoculture plantations), often leading to dependence on harmful pesticides**
- **loss of some of the ecological functions played by the forest when plantations replace natural forests;**
- **heavy dependence on genetic engineering and plant breeding to enhance quality & yield and resistance to diseases and pests**

Cultural Evolution- is the learned behavior passes from generation to generation

CULTURAL FORCES DIRECTING EVOLUTION.

Because of this unique combination of brain and specialized physical features early man began to control his environment i.e. to use it to alter his life. These include things actually discovered, made or used by man such as;

1) Tools made by chipping stones and bones.
2) Clothing and shelter made from plants and skins.
3) The use of fire for a range of purposes.
4) Co-operative hunting in groups

The above resulted in man becoming an efficient hunter living in groups. Even though his genes were almost unchanged, he now lived more comfortably with a better survival rate.

FURTHER CULTURAL EVOLUTION.

From gather to scavenger to hunter was just the first stage in man's cultural evolution. This was done was done over a long time approximately 1 million years.

Note: Few societies today still are at this stage e.g. some Australian Aboriginals.

For most societies the next stage in cultural evolution was as follows;

a. AGRICULTURAL REVOLUTION.

Man learnt to plant and look after food plants especially grains, and to domesticate animals

Plants-Maize, Wheat, Rice

Animals-Sheep, Cattle, Camels, Horses, Goats, Dogs

Agricultural evolution resulted in communities living in permanent stable settlements of large sizes. Such people developed qualities such as patience and a sense of property preparing the way for the next step.

Contributing Factors to the Agricultural Revolution

- The increased availability of farmland.
- A favourable climate.
- More livestock.
- Improved crop yield.

b. TRADE AND INDUSTRIAL REVOLUTION.

As communities became larger, the idea of trade and commerce began to develop. This resulted in large cities growing up where markets and trading systems developed. These were places where people could develop special skills e.g. pottery, metal works etc. It also resulted in rivalry and sometimes war.

c. TECHNOLOGICAL REVOLUTION & SHARING IDEAS.

The sharing of ideas resulted in the great speeding up of Cultural Revolution. In the last 200 years there has been a rapid development of science and technology resulting in man developing the power to dominate his environment completely. Especially medical science has solved the problems of many infectious diseases. It has of course given us the major problems of;

1) Over population
2) Over pollution

These two problems threaten to destroy us. Not only can we modify our environment but also because of our knowledge of genes we can alter the evolution of other animals by selective breeding and genetic engineering. Such power should be controlled as it may eventually destroy us.

An exponential growth in human population occurred in three main era's;

1) Cultural Evolution
2) Agricultural Revolution
3) Industrial Revolution

ACTIVITY:

1. According to human evolution, the increase in brain size, directly improves
   A. language.
   B. stone tools.
   C. agriculture.
   D. bipedalism.

2. Using as examples a human being and an ape, describe the difference in their :
   (i) backbone._____

   _____

   _____

   (

   ii)foot._____

   _____

3. Study the diagram below and answer the questions that follow.

i. From the diagram, identify **one** feature that evolutionists used to suggest that the species was a vegetarian.
   _____

ii. Explain the significance of the feature.
   _____

   _____

4. Human cultural evolution proceeded rapidly with the domestication of animals and plants.

i. Name the first animal domesticated by man. _____

ii. In many areas, the nomadic hunter-gatherer way of life was replaced by a more settled existence. Explain **one** advantage and **one** disadvantage of settled existence.

   _____

   _____

   _____

   _____