Biology
Performance Task #5

Adapted from:
http://www.accessexcellece.org
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Standards Group Assessed:
Instructional Component 3A—Standard Sets 1, 2, 3, 4

Specific Standard(s) Assessed:
9a, 9b, 9c, 9d, 9e, 10a, 10b, 10c, 10d, 10e

The Task: Tour of the Human Body Brochure

Directions to the Student:

You have been hired as a travel consultant to design a luxury tour through the Human Body Systems. Before you can collect your fee from the Anatomy Travel Bureau, you must produce a brochure. The owner of the travel bureau has informed you that in order to win the contract you must highlight the trendy spots, the exciting activities, and the imports and exports of the areas. For insurance considerations, you must also discreetly mention any possible dangers or special precautions that tourists might encounter in visiting these systems. Your world body tour should include visits to the following systems: (1) Digestive, (2) Respiratory, (3) Endocrine (4) Immune, (5) Nervous, (6) Excretory, and (7) Circulatory.

- 14 pieces of paper measuring 8.5" X 11" should be used
- 7 systems will have 2 sections each, 1 section for the pictures and the other for the explanations.
- The key feature is to give an overall sense of the organization and function of each of the 7 systems. You may use figures provided, drawings, computer graphics, photographs of actual organs, pictures from magazines, journals, or books to help in your advertisement of each system. Whenever possible, type all written parts of brochure. Let your imagination run WILD!

Systems Objectives

The Immune System
OBJECTIVES:

1. Describe the function of the immune system.
2. Explain how the skin functions as a defense against disease.
3. Distinguish between a specific and nonspecific response.
4. Describe the actions of B cells and T cells in an immune response.
5. Describe the relationship between vaccination and immunity.
6. Describe enemies of the immune system such as bacteria and viruses.

7. Describe why someone with AIDS may be unable to fight off infection
8. Explain (diagram) the antigen-antibody reaction.

VOCABULARY TO INCLUDE IN PAMPHLET:
Immunology, antigen, antibody, lymphocyte, leukocyte, B-cell, T-cell, macrophage, vaccine, antibiotic, inflammatory response, immune response, histamine, helper T cell, pathogen, killer T cells, bacteria, viruses, HIV, AIDS

Nervous System
OBJECTIVES:

1. Describe the basic structure and function of the nervous system.
2. Describe the structure of a neuron and explain how it operates. (Diagram)
3. List the parts and discuss the function of the Central Nervous System (CNS). Discuss the structure and control centers of the brain.
4. Describe the Peripheral Nervous System (PNS) and how it communicates information to and from the brain.
5. Explain how a nerve impulse travels, include the events occurring at the synapse.
6. Explain what occurs during the reflex arc. (Diagram)

VOCABULARY TO USE IN THE PAMPHLET:
Central Nervous System, Peripheral Nervous System, neuron, dendrite, cell body, axon, sensory neuron, motor neuron, interneuron, resting potential, action potential, nerve impulse, synapse, axon terminal (synaptic knob), neurotransmitter, stimulus, response, reflex, brain, cerebrum, cerebellum, medulla oblongata, spinal cord

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The Excretory System
OBJECTIVES:

1. Define excretion.
2. Describe the function of the skin, kidneys, lungs and liver in the excretory process.
3. Describe the structure and function of the kidney and its parts.
4. How is the excretory system related to the circulatory system?

VOCABULARY TO BE INCLUDED IN PAMPHLET
excretion, kidney, nephron, ureter, urethra, urine, bladder, aorta, renal artery, renal vein, metabolic wastes, sweat glands

Respiratory System

OBJECTIVES:

1. Identify the structure and function of the parts of the respiratory system.
2. Explain how breathing rate is controlled.
3. Describe what happens between the alveoli and the capillaries.
4. Describe the effects of smoking on respiration.

VOCABULARY TO BE INCLUDED IN THE PAMPHLET:

alveoli, gas exchange, trachea, bronchi, bronchiole, larynx, lung, oxygen, carbon dioxide, pharynx, inhalation, exhalation, cilia, respiratory control center,

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Transport: The Circulatory System
OBJECTIVES:

1. List the functions of the human circulatory system.
2. Trace a drop of blood through the heart from right atrium to the aorta.
3. Locate and label the parts of a heart on a diagram.
4. Compare the blood on the right side of the heart with that on the left side.
5. Describe the components of blood.(red blood cells, white b.c., platelets and plasma)
6. Identify and describe the function of the different types of circulation: pulmonary and systemic circuits. .

VOCABULARY TO BE INCLUDED IN PAMPHLET
aorta, artery, capillary, vein, vena cava, atrium, valve, ventricle, circulatory system, pulmonary circulation, systemic circulation, red blood cells, hemoglobin, white blood cells, platelets, plasma, deoxygenated blood

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The Digestive System
OBJECTIVES:

1. List the parts of the digestive system and give their functions.
2. Compare mechanical digestion to chemical digestion.
3. Explain the function of the digestive enzymes amylase, protease and lipase.
4. Explain the results of the chemical digestion of carbohydrates, proteins and fats and discuss if this digestion occurs in the mouth, stomach and/or small intestines.
5. Discuss the importance of the liver and pancreas in digestion. List the substances they produce and explain their function.
6. Describe the structure of the villi and explain how its function is related to its structure.

VOCABULARY TO BE INCLUDED IN THE PAMPHLET:
digestion, salivary gland, esophagus, stomach, pyloric sphincter valve, duodenum, liver, gall bladder, pancreas, small intestines, villi, large intestines, rectum, mucous, feces, alimentary canal, peristalsis, amylase, hydrochloric acid, pepsin, lipase, bile, acid

The Endocrine System

OBJECTIVES:

1. List the major function of the human endocrine system
2. List the major endocrine glands.
3. Name the functions of at least 7 hormones
4. Describe glucose homeostasis
5. Describe negative feedback loops which prevent you from forming a goiter

VOCABULARY TO BE USED IN PAMPHLET

endocrine system, hormones, endocrine glands, homeostasis, thyroid gland, thyroxine, iodine, goiter, adrenal gland, epinephrine, pancreas, glucagon, insulin, alpha cells, beta cells, glycogen, diabetes, pituitary gland, hypothalamus, growth hormone, negative feedback loop, antidiuretic hormone, prolactin

Clear Expectations for Performance:

FOUR POINT ASSESSMENT
1= the element described is missing
2= the element is present, but does not meet standard described
3= the element is present and meets standard, but needs some revision or improvement
4= the element is present and meets or exceeds the standard and no revision is recommended

Content 70%
1 2 3 4 Information presented is accurate, factual, and relevant to the specific topic
1 2 3 4 Research is in-depth and covers all systems and required topic areas
1 2 3 4 Time, energy, effort, enthusiasm, and group commitment to the project are evident
1 2 3 4 Project shows mastery of structure and function of human systems
1 2 3 4 Interrelationships between systems are clearly depicted and explained

Travel Brochure 30%
1 2 3 4 Travel brochure is neat and shows thought and effort
1 2 3 4 Travel brochure clearly illustrates all structures, functions, and risks associated with travel to each system
1 2 3 4 Travel brochure exhibits creativity

Student Evaluation
- **Student Reflection on the Task and Product:**
  - Students apply rubric to their own work