**Science 8 Unit B: Human Body Systems**

***Build a Body***

*(PH2010)*

*You will work together to build a realistic 3D model of the human body systems studied. You will use this model to explain how these systems are interconnected. You will communicate and collaborate as well as use a model to demonstrate your learning.*

**Student Role:** To build a 3D model of the human body systems that will allow other students to visualize and learn about the human body systems.

**Audience:** Grade 8 students

**Performance and/or Product:** 3D life-size to scale model of the human body systems with the accompanying descriptions.

**Context:** Many students learn better when they can see what they are learning. You will construct a 3D model that will be designed to help other students learn about the human body systems

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| **LEARNER OUTCOMES** | ***CRITERIA FOR EVALUATION***  Students provide evidence of their learning as they: |
| **General Outcome(s)**  *B3: It is expected that students will be able to explain the relationship between cells, tissues, organs, and organ systems.* |
| **Specific Outcomes** |
| Create diagrams or models of cells and organ systems | *Create a life-size to scale 3D model of the human body.* |
| Identify the main components of the human organ systems (e.g., respiratory, circulatory, digestive, and excretory systems) | *Identify and describe the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* |
| Define the terms *tissue*, *organ*, and *organ system* |
| Describe the relationship between cells, tissues, organs, and organ systems |
| Distinguish between cells, tissues, organs, and organ systems, based on structure and function |
| Describe the basics of various systems of the human body (i.e., respiratory, circulatory, digestive, and excretory) | *Describe the human body systems and how they work together.* |
| Describe how organ systems work together to obtain and transport nutrients, remove wastes, and exchange gases |

You are to create a life-size 3D model that is to scale that includes the following body systems that we have learned about:

1. Skeletal system
2. Circulatory system
3. Respiratory system
4. Excretory system
5. Digestive system
6. Muscular system (bonus)

You need to have the main organs for all of these systems and the organs should be to scale. You need to describe the function of each of these organs and you need to create a magnified section for each of the following organs to describe the tissues and cells that make up each one.

1. Femur
2. Heart
3. Lungs
4. Kidney
5. Stomach
6. Pectoral Muscle (bonus)

You need to explain how the human body systems work together to get nutrients to each of our body’s cells and also how they work together to remove waste form the body’s cells. You need to specifically describe the transport of the following materials:

1. Oxygen and Carbon Dioxide
2. Food and Feces
3. Water and Urea

You need to compare and contrast the functions of the kidney and the liver and the lungs and the small intestine in your explanation.

**Some of the tasks in this assignment are group tasks and others are individual tasks. Group tasks are designed to help you successfully complete the individual tasks.**

In a group with a MAXIMUM of 4 students you will be given 5 classes to:

1. Create a life-size to scale 3D model of the human body (group). Your model needs to have the following systems:
   1. Skeletal system
   2. Circulatory system
   3. Respiratory system
   4. Excretory system
   5. Digestive system
   6. Muscular system (bonus)
2. Each system needs to have:
   1. All organs (group)
   2. Organs built to scale and placed in the correct position in the body. (group)
   3. A description of the function of each organ. (individual)
   4. A comparison of the functions of the organs in each system. (individual)
3. A magnified portion of each of the following organs that explains the tissue and cell types in that organ (group).
   1. Femur
   2. Heart
   3. Lungs
   4. Kidney
   5. Stomach
   6. Pectoral muscle (bonus)
4. An explanation of the interconnectedness of the organ systems (individual).
   1. Describe how each system transports nutrients to our cells and how they transport waste away from our cells.
   2. Describe how the systems work together to transport nutrients to our cells and how they remove waste products from our cells.
   3. Describe the role of oxygen and carbon dioxide in our body systems and explain their transport.
   4. Describe the role of food and feces. In this portion you should include some of the nutritional information covered during HACE to explain the importance of a balanced diet in the health of our body systems.
   5. Describe the role of water and urea.
   6. Compare and contrast the following organs:
      1. Kidney and liver
      2. Lungs and small intestine.

**In order to complete your project in time you will need to:**

**Steps 1-4 should be completed during the first class.**

Step1: Brainstorm your supply list. I can provide you will the following:

1. Paper
2. Rubber hosing
3. Balloons
4. Plasticine
5. School supplies

Step 2: Divide the supply list up between your group members. Some of you will need to bring supplies from home.

Step 3: Copy and hand in your supply list so that Mrs. Horton know what and how much of each item is needed.

Step 4: Measure the height of the person you will be outlining. Measure that amount of paper off the roll paper and cut it off the roll. Have the person lie down on the paper and trace their outline.

**Steps 5 should be completed and Step 6 should be started during the second class.**

Step 5: Plan the construction of your 3D model. Write out your plan and show it to Mrs. Horton for her approval and input.

Step 6: Construction of 3D model.

**Step 6 should be completed by the end of the fourth class.**

**Step 7 should be completed during the fifth and final class.**

Step 7: Explanation. You need to complete your group and individual written portion of this assignment.

**When you have completed your assignment you need to detach the final four pages of this handout. Fill out the self and group assessment. Complete the reflection. Please attach the individual portion of your assignment to these sheets. ENSURE THAT YOUR NAME IS ON YOUR ASSIGNMENT AND THE RUBRIC HANDOUTS!**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Rubric:**

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| **Level**  **Criteria** | **4**  **Excellent** | **3**  **Proficient** | **2**  **Adequate** | **1**  **Limited\*** | **Insufficient/ Blank\*** |
| ***Create a life-size, to scale, 3D model of the human body.*** | *Innovative life-size, to scale, 3D model of the human body.* | *Effective life-size, to scale, 3D model of the human body.* | *Workable life-size, to scale, 3D model of the human body.* | *Ineffective life-size, to scale, 3D model of the human body.* | **No score is awarded because there is insufficient evidence of student performance based on the requirements of the assessment task.** |
| ***Identify and describe the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)*** | *Precise identification and description of the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* | *Accurate identification and description of the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* | *Partial identification and description of the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* | *Vague identification and description of the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* |
| ***Describe the human body systems and how they work together.*** | *Insightful description of the human body systems and how they work together.* | *Meaningful description of the human body systems and how they work together.* | *Appropriate description of the human body systems and how they work together.* | *Superficial description of the human body systems and how they work together.* |

Comments:

# Group and Self-Assessment

This assessment tool is completely confidential. Scores will be used to help and determine each group member’s individual score. Fill out the first rubric for your own performance. Use the second rubric to evaluate your team members’ performance. Use each column for a different team member (write in each name at the top).

# Student Self-reflection Checklist

**Student Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Date** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Task:** Build a Body

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| --- | --- | --- |
| **Criteria** | **Yes, because . . .** | **Not yet, but here’s how**  **I can make it better:** |
| *Create a life-size to scale 3D model of the human body.* |  |  |
| *Identify and describe the main components the human organ systems (skeletal, respiratory, circulatory, digestive, excretory)* |  |  |
| *Describe the human body systems and how they work together.* |  |  |

**Self‐Assessment**

|  |  |
| --- | --- |
| **My Own Teamwork Skills** | **Rating (E, P, A, NY)** |
| **Listening**:  I listen to my team's ideas and use their ideas to help get new ones (piggy-backing). |  |
| **Questioning**:  I ask questions of my team to help them figure out what to do and to extend their thinking. |  |
| **Persuading**:  I exchange ideas, defend my ideas and try to explain my thinking to my team. |  |
| **Respecting**:  I respect the opinions in my team. I offer encouragement and support for new ideas and efforts. |  |
| **Participating**:  I contribute to the team assignment. I am actively involved with the work at each stage of the planning process. |  |
| **Sharing**:  I share with my team. I make sure I share my ideas and thinking. I share the jobs. |  |

**Peer Assessment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **My Group Member’s Teamwork Skills** | Team-member 1  Name:\_\_\_\_\_\_\_\_\_\_\_ | Team-member 2  Name:\_\_\_\_\_\_\_\_\_\_\_ | Team-member 3  Name:\_\_\_\_\_\_\_\_\_\_\_ | Team-member 4  Name:\_\_\_\_\_\_\_\_\_\_\_ |
|  | Rating  (E, P, A, NY) | Rating  (E, P, A, NY) | Rating  (E, P, A, NY) | Rating  (E, P, A, NY) |
| **Listening**: My team member listened to my ideas and used his/her ideas to help get new ones (piggy-backing). |  |  |  |  |
| **Questioning**: My team member asks questions of the team to help figure out what to do and to extend our thinking. |  |  |  |  |
| **Persuading**: My team member exchanges ideas, defends his/her ideas and tries to explain his/her thinking to the team. |  |  |  |  |
| **Respecting**: My team member respects the opinions in my team. S/he offers encouragement and support for new ideas and efforts. |  |  |  |  |
| **Participating**: My team member contributes to the team assignment. S/he is actively involved with the work at each stage of the planning process. |  |  |  |  |
| **Sharing**: My team member shares with my team. My team member makes sure s/he shares ideas and thinking. My team member shares the jobs. |  |  |  |  |

**Student Reflection:**

**I know I have met the learning outcomes in this performance task because I have…**

**This task has helped me make connections between my learning and the real world by...**

**To improve my performance in the future I will...**