

HPE Activities and Assessments Task Force

Middle School Health (6-8) Structures and Functions of the Body

LESSON INFORMATION:

Lesson Title: Structures and Functions of the Body

Objective: Structure and Functions of the Body

Grade Level: Middle School 6, 7 and 8

GLEs:

Functions and Interrelationships of Systems

- FS1B6 Classify the three different types of muscle tissue and differentiate between voluntary and involuntary muscle movement.
- FS1C7 Explain how the skeletal system supports and protects other body systems.
- FS1E7 Analyze how aerobic exercise impacts an individual physically, mentally, and emotionally.
- FS1F6 Illustrate air flow through the respiratory system and its relationship to the circulatory system.
- FS1G6 Investigate how environment affects learning
- FS1G6 Distinguish between the CNS and PNS
- FS1G7 Describe how healthy lifestyle choices affect the functioning of the central nervous system and peripheral nervous system
- FS1H6 Identify the function of the organ in the digestive system as it relates to overall health.
- FS1I7 Relate how health behaviors affect the urinary/excretory system.
- FS1J6 Describe how the endocrine system affects all other body systems.
- FS1J8 Relate a function of each endocrine gland and how it is impacted by lifestyle choices.
- FS1L6 Label the major components and identify the functions of the lymphatic-immune system.
- FS2A6 Differentiate between negative and positive peer pressure and discuss refusal techniques.

FS2A6 Evaluate ideas and perspectives regarding the influence that family, friends, and culture have on health choices and behavior during adolescence.

Health Maintenance and Enhancement

- ME1A6 Identify body changes during puberty and hygiene practices.
- ME1A7 Critique personal behaviors and their cause and effect that relate to the following choices: eating breakfast daily; refraining from the use of tobacco and alcohol; sleeping six to eight hours a night; maintaining a healthy weight; daily moderate to vigorous physical activities; making healthy food choices.
- ME1A8 Analyze how social, emotional, physical, and mental health affect wellness.
- ME1B7 Predict problems that may occur due to insufficient or lack of preventive care for health needs.
- ME1B8 Assess personal health needs during adolescence and apply strategies to address those needs or problems.
- ME1C6 Compare and contrast factors that can affect growth and development which one can alter, enhance, or adapt.

Content Standard(s):

HPE1, HPE2, HPE3, HPE5

Process Standard(s):

Goal 1.6, 1.8, 1.10

Goal 3.1

Goal 4.1, 4.3, 4.6, 4.7

Time needed to Teach this Lesson/Unit:

5 Days – 50 minutes per day

Day 1: Active Vote pre-assessment Flip Chart (Resource A)

Day 2: Follow up and clarification of material on the pre-assessment Flip Chart (Discussion and note taking)

Day 3: Body System Grid-graphic organizer/study guide (Resource B)

Day 4: Body System Cube Game - See Lesson Design (Resource C)

Day 5: Tic-Tac-Toe Body System Project (Resource D)

LEARNING TARGETS:

- (1) The student will be able to identify 10 body systems by body system image. (Skeletal, Muscular, Circulatory, Respiratory, Digestive, Excretory/Urinary, Nervous, Endocrine, Integumentary, Immune)
- (2) The student will be able to define the functions of 10 body systems.
- (3) The student will be able to recall the tissues/parts/organs of the 10 body systems.
- (4) The student will be able to summarize problems of the 10 body systems.
- (5) The student will be able to apply knowledge of how to keep the 10 body systems healthy.
- (6) The student will be able to formulate the cause and effect of lifestyle choices on the 10 body systems.

LESSON DESIGN: Body System Cube Game

- (1) Post the images of the following 10 Body Systems on the active board/smart board/chalkboard/bulletin board (A. Skeletal, B. Muscular, C. Circulatory, D. Respiratory, E. Digestive, F. Excretory/Urinary, G. Nervous, H. Endocrine, I. Integumentary, J. Immune). (Resource C)
- (2) Each Body System needs to be identified by a letter, A-J.
- (3) Students will be in groups of 3 or 4.
- (4) Each group needs 10 index cards with an individual letter on each card, A-J.
- (5) Each group needs a cube (photo cube, square box). Each side of the box will have a different question posted on the cube, 6 total sides. Six Questions: 1. Identify the name of the Body System. 2. Define the function of the Body System. 3. Recall the tissues/parts/organs of the Body System. 4. Summarize the possible problems of the Body System. 5. Apply knowledge of how to keep the Body System healthy. 6. Formulate the cause and effect of lifestyle choices on the Body System. (DOK: Different levels of Depth of Knowledge within each question.)
- (6) Determine who will go first and then rotate clockwise around the group. The first player will turn over the index card to determine which Body System their question will be about. (A=Skeletal) They will then roll the cube to determine their question concerning that Body System. (Question: Define the function of the Body System.) The student answers out loud to their group. If the student does not know the answer or answers incorrectly other group members can assist with the correct answer. Resources may also be used to determine the correct answer. (e.g. Body

System Grid template , class notes, text book, www.KidsHealth.org) The index card is put under the bottom of the stack and play continues.

(7) Body System Grid template:

Name of the Body System	Functions of the System	Parts/Tissues /Organs of the System	Problems with the System	Keeping the System Healthy	Cause and Effect of Lifestyle Choices
Skeletal					
Muscular					
Circulatory					
Respiratory					
Digestive					
Excretory/Urinary					
Nervous					
Endocrine					
Integumentary					
Immune					

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(8) Game modifications/differentiation: (A.) Pick an image of a Body System and answer all six questions for that image. (B.) Starting with an image identify how that system interacts with all of the other nine systems.

ASSESSMENT:

A pre-test will be taken at the beginning of the unit for baseline knowledge. (These assessments will vary based on District Curriculum, textbook and other resources.) Each student will have a filled out and laminated Body System Grid. As they answer the questions correctly they check off the appropriate square. This will become a reflective piece for further content instruction. A post-test will be taken at the end of the unit for content knowledge.

DIFFERENTIATED INSTRUCTION:

During the Body System Cube Game students can use the Body System Grid-graphic organizer to assist with answering the questions. Students may have para-educator support to assist with the completion of the graphic organizer. On the Active Vote pre-assessment flip chart students may have a limited number of

responses choices. On the Tic-Tac-Toe project students may choose three squares that are not in a row or complete a fewer number of squares. Assistance with writing and/or scribing may be adaptive as needed.

Technology and Materials Needed:

www.KidsHealth.org is a helpful web site, go to the “Kids” section and under the drop down menu select “How The Body Works”.

See lesson design and resource for all needed materials.

Resources:

Resource A - Active Vote pre-assessment Flip Chart

Resource B – Body System Grid-graphic organizer/study guide

Name of the Body System	Functions of the System	Parts/Tissues /Organs of the System	Problems with the System	Keeping the System Healthy	Cause and Effect of Lifestyle Choices
Skeletal					
Muscular					
Circulatory					
Respiratory					
Digestive					
Excretory/Urinary					
Nervous					
Endocrine					
Integumentary					
Immune					

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Resource C – Body System Cube Game Images

Resource D – Tic-Tac-Toe Body System Project (6th, 7th, and 8th grades)

Tic-Tac-Toe projects are indicated by grade level. The squares are aligned to the GLE’s for each grade level.

Structures and Functions of the Body

Name: _____

6th Grade Tic-Tac-Toe Project

Period: _____

Project Due Date: _____ Tic-

Tac-Toe Project: Please select 3 activities in a row (across, down or diagonal) to complete the project. Activities selected should be indicated on the top of each square. The selected activities must be completed on your own time. Attach all paperwork to this project page. **Information sources:** Class notes, Health textbook 1-chapter 6 and Health textbook 2 pg. 336-340. www.KidsHealth.org

<p>Selected Square: _____</p> <p>Using a table grid classify the three different types of muscle tissue (smooth, cardiac, skeletal) and differentiate between voluntary and involuntary movement.</p>	<p>Selected Square: _____</p> <p>Using a Venn Diagram distinguish between and CNS and the PNS (Central Nervous System and Peripheral Nervous System) (Label each section of the diagram and include three facts in each section.)</p>	<p>Selected Square: _____</p> <p>Identify the function of each organ in the digestive system (e.g., mouth, esophagus, stomach, pancreas, gallbladder, liver, small intestines, large intestines and colon) as it relates to overall health.</p>
<p>Selected Square: _____</p> <p>Using a "web" describe how the endocrine system affects the following body systems. (Endocrine system in the center and skeletal, digestive, nervous and integumentary branching off, label each system and identify three facts for each system.)</p>	<p>Selected Square: _____</p> <p>Illustrate the air flow through the respiratory system and it's relationship to the circulatory system. (Label: oxygen-rich blood, oxygen-poor blood, arteries, veins, capillaries and blood flow through the heart.)</p>	<p>Selected Square: _____</p> <p>Using a table grid differentiate among the types of joints in the skeletal system (e.g., ball and socket, hinge, gliding, pivot, moveable and immovable)</p>
<p>Selected Square: _____</p> <p>Illustrate, label and identify the parts and functions of the lymphatic system. (e.g., lymph nodes, lymph vessels, tonsils, thymus and spleen)</p>	<p>Selected Square: _____</p> <p>Identify the functions of the Immune and lymphatic systems and indicate how they support each other. Additionally describe how the lymphatic system is like the circulatory system.</p>	<p>Selected Square: _____</p> <p>Distinguish between X and Y chromosomes and identify the parts and functions of the secondary sex characteristics (ovaries, testes and fertilization).</p>

Tic-Tac-Toe Project Assessment

1 - Beginning	2 - Approaching	3 - Meeting	4 - Surpassing
<p>Student is still developing prerequisite skills for mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is at the beginning level or below as it relates to the standards and expectations in all three tic-tac-toe squares. Requirements listed in one or two squares have been executed in the final project.</p> <p>(Ex: Numerous missing project requirements for the three tic-tac-toe squares incorporated within the final project.)</p>	<p>Student demonstrates partial mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is approaching standards and expectations in all three tic-tac-toe squares. Requirements listed in two squares have been executed in the final project.</p> <p>(Ex: Two of the three tic-tac-toe squares requirements are incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets and surpasses standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project including additional facts indicated in all three tic-tac-toe squares. Or an additional square was completed and all project requirements were incorporated.)</p>

Final Project Score: _____

Structures and Functions of the Body

Name: _____

7th Grade Tic-Tac-Toe Project

Period: _____

Project Due Date: _____

Tic-Tac-Toe Project: Please select 3 activities in a row (across, down or diagonal) to complete the project. Activities selected should be indicated on the top of each square. The selected activities must be completed on your own time. Attach all paperwork to this project page. **Information sources:** Class notes, Health textbook 2-chapters 3, 6 and pg. 336-340. www.KidsHealth.org

<p>Selected Square: _____</p> <p>Using a table grid classify how muscles work in pairs for movement to occur and provide examples (biceps/triceps, quadriceps/hamstrings) indicate flexion and extension of the joint and what type of muscle contraction.</p>	<p>Selected Square: _____</p> <p>Using a Venn Diagram illustrate your respiratory rate during inactivity and activity, jogging for 1 minute resting for 5 minutes. (Label each section of the diagram and include three facts/reasons in each section's data.)</p>	<p>Selected Square: _____</p> <p>Identify the function of each gland in the endocrine system (e.g., pituitary, thyroid, parathyroid, adrenal, pancreas, ovaries and testes) as it relates to overall health.</p>
<p>Selected Square: _____</p> <p>Using a "web" describe how the skeletal system supports the following body systems. (Skeletal system in the center and circulatory, muscular and nervous branching off, label each system and identify three facts for each system.)</p>	<p>Selected Square: _____</p> <p>Explain how health behaviors affect the excretory system. Additionally describe how the lungs, skin, kidneys, bladder and colon eliminate waste.</p>	<p>Selected Square: _____</p> <p>Using a table grid describe how healthy lifestyle choices (e.g., exercise, diet, sleep) affect the functioning of the central nervous system and peripheral nervous system (e.g., exercise increases endorphins, stress relief, mental alertness)</p>
<p>Selected Square: _____</p> <p>Illustrate, label and identify the parts and functions of the immune system. (e.g., body defenses, phagocyte, lymphocytes, antigens, antibodies and immunity)</p>	<p>Selected Square: _____</p> <p>Distinguish between dominante and recessive traits and identify chromosomes and genes.</p>	<p>Selected Square: _____</p> <p>Identify how aerobic exercise impacts an individual (e.g., physically, mentally and emotionally)</p>

Tic-Tac-Toe Project Assessment

1 - Beginning	2 - Approaching	3 - Meeting	4 - Surpassing
<p>Student is still developing prerequisite skills for mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is at the beginning level or below as it relates to the standards and expectations in all three tic-tac-toe squares. Requirements listed in one or two squares have been executed in the final project.</p> <p>(Ex: Numerous missing project requirements for the three tic-tac-toe squares incorporated within the final project.)</p>	<p>Student demonstrates partial mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is approaching standards and expectations in all three tic-tac-toe squares. Requirements listed in two squares have been executed in the final project.</p> <p>(Ex: Two of the three tic-tac-toe squares requirements are incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets and surpasses standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project including additional facts indicated in all three tic-tac-toe squares. Or an additional square was completed and all project requirements were incorporated.)</p>

Final Project Score: _____

Structures and Functions of the Body

Name: _____

8th Grade Tic-Tac-Toe Project

Period: _____

Project Due Date: _____

Tic-Tac-Toe Project: Please select 3 activities in a row (across, down or diagonal) to complete the project. Activities selected should be indicated on the top of each square. The selected activities must be completed on your own time. Attach all paperwork to this project page.

Information sources: Class notes, Health textbook 3-chapters 14, 15 and 16.

www.KidsHealth.org

<p>Selected Square: _____</p> <p>Using a table grid classify how environment and behaviors can have an impact body systems (e.g., respiratory, integumentary and immune systems)</p>	<p>Selected Square: _____</p> <p>Using a Venn Diagram illustrate how your learning is influenced by the brain's short term and long term memory. (Label each section of the diagram and include three facts in each section.)</p>	<p>Selected Square: _____</p> <p>Identify the function of each gland in the endocrine system (e.g., pituitary, thyroid, parathyroid, adrenal, pancreas, ovaries and testes) and how it is impacted by lifestyle choices.</p>
<p>Selected Square: _____</p> <p>Using a "web" describe how to have a body "systems check". (Put "My body" in the middle and circulatory, muscular, nervous, skeletal, respiratory, digestive, excretory, and endocrine branching off, label each system and identify three self checks for each system.)</p>	<p>Selected Square: _____</p> <p>Explain how to maintain a healthy reproductive system. (e.g., care of the male and female reproductive organs/tissues)</p>	<p>Selected Square: _____</p> <p>Using a table grid describe how healthy lifestyle choices (e.g., exercise, diet, sleep) affect the functioning of the circulatory system and specifically a healthy vs. unhealthy heart.</p>
<p>Selected Square: _____</p> <p>Using a Venn diagram illustrate how the circulatory system and the digestive system work together. (Label each section of the diagram and include three facts in each section.)</p>	<p>Selected Square: _____</p> <p>Ask your parents/guardians if heredity (health factors linked to your genes) health risks will have an influence on your well-being. Describe how you will adjust your lifestyle knowing your health risks. (e.g., diabetes, heart disease, cancer)</p>	<p>Selected Square: _____</p> <p>Identify cancer signs and symptoms and explain the importance of monthly self-examinations. (e.g., breast cancer and testicular cancer)</p>

Tic-Tac-Toe Project Assessment

1 - Beginning	2 - Approaching	3 - Meeting	4 - Surpassing
<p>Student is still developing prerequisite skills for mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is at the beginning level or below as it relates to the standards and expectations in all three tic-tac-toe squares. Requirements listed in one or two squares have been executed in the final project.</p> <p>(Ex: Numerous missing project requirements for the three tic-tac-toe squares incorporated within the final project.)</p>	<p>Student demonstrates partial mastery of the key concepts indicated in all three tic-tac-toe squares. Final project is approaching standards and expectations in all three tic-tac-toe squares. Requirements listed in two squares have been executed in the final project.</p> <p>(Ex: Two of the three tic-tac-toe squares requirements are incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project.)</p>	<p>Student demonstrates secure mastery of key concepts indicated in all three tic-tac-toe squares. Final project meets and surpasses standards and expectations in all three tic-tac-toe squares. Requirements listed in all three squares have been executed in the final project.</p> <p>(Ex: All project requirements incorporated within the final project including additional facts indicated in all three tic-tac-toe squares. Or an additional square was completed and all project requirements were incorporated.)</p>

Final Project Score: _____

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