

Unit Focus

After viewing images of the manifestations of various endocrine and musculoskeletal disorders, the students will have the choice of which system and disorder they would like to investigate in depth. Throughout the unit, students will work to uncover the details of their chosen system and develop a model and website to explain the structures and functions of the body system. The website, which will include the student-developed model, will be used for the summative assessment in which students will analyze a case study and determine the physiological cause of the symptoms.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
<p>Next Generation Science <i>High School Life Sciences: 9 - 12</i></p> <ul style="list-style-type: none"> Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. <i>HS-LS1-2</i> <p>Next Generation Science Standards (DCI) <i>Science: 10</i></p> <ul style="list-style-type: none"> Systems of specialized cells within organisms help them perform the essential functions of life. <i>LS1.9.A1</i> Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. <i>LS1.9.A4</i> <p>Student Growth and Development 21st Century Capacities Matrix <i>Critical Thinking</i></p> <ul style="list-style-type: none"> Analyzing: Students will be able to examine 	<p>T1 Communicate effectively based on purpose, task, and audience to promote collective understanding and/or recommend actions.</p> <p>T2 Create models to explore complex systems, show mastery of key science concepts, and/or develop solutions through creation of a product open to testing and redesign.</p>	
	Meaning	
	Understanding(s)	Essential Question(s)
	<p>U1 The structure of a given organ or organ system is related to its function.</p> <p>U2 Individual components of a body system all work together to create a functioning system.</p> <p>U3 When the natural feedback loops or structures and functions of a system fail, typical symptoms will manifest that can be used to analyze the underlying causes of the issue.</p>	<p>Q1 How does structure relate to function?</p> <p>Q2 Why does an individual with an endocrine or musculoskeletal disorder look and/or move the way they do?</p> <p>Q3 How do the components of a body systems function together to allow organisms to complete a specified task, either voluntarily or involuntarily?</p> <p>Q4 How can I apply my understanding of how body systems work to analyze a medical issue?</p>
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<p>K1 The endocrine system is responsible for releasing compounds in the body, while the exocrine moves compounds out of the body.</p> <p>K2 There are different hormones that all have specific functions, originate from various locations and which</p>	<p>S1 Conducting research to investigate, model, and communicate detailed information about a body system.</p> <p>S2 Developing a visual model that explains how the individual parts of a body system work together to make a functioning system.</p>

Stage 1: Desired Results - Key Understandings

<p>information/data/evidence to make inferences and identify possible underlying assumptions, patterns, and relationships. <i>MM.1.2</i></p> <p><i>Creative Thinking</i></p> <ul style="list-style-type: none"> Design: Students will be able to engage in an appropriate process to refine their product. <i>MM.2.3</i> <p><i>Collaboration/Communication</i></p> <ul style="list-style-type: none"> Product Creation: Students will be able to effectively use a medium to communicate important information (findings, ideas, feelings, issues, etc.) for a given purpose. <i>MM.3.2</i> 	<p>target different locations for a specific purpose.</p> <p>K3 Negative feedback loops are used by the endocrine system to regulate the amount of a given hormone in the body.</p> <p>K4 Students will know the endocrine organ implicated in their chosen disorder, the hormones it creates, what those hormones do, and how the feedback loop for the hormone is broken leading to the onset of the disorder.</p> <p>K5 Long bones are different from flat bones in both structure and function.</p> <p>K6 Students will know the various types of bone fractures/breaks and how bones mend themselves after injury.</p> <p>K7 The "sliding filament model" is the explanation of how the structures of muscles function in contraction of the muscles.</p> <p>K8 Muscles and bones work together to allow for movement.</p> <p>K9 Students will know the cause, symptoms, long term effects on the body, diagnosis, and treatment of musculoskeletal disorder.</p>	<p>S3 Creating a website that correctly uses medical terminology and that can be used as a reference for others to learn about a chosen body system.</p> <p>S4 Analyzing case studies and applying content to determine the physiological cause of the condition.</p>
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