Expert Pack: Body Systems

Submitted by: West Elementary, Gulfport School District, MS Grade: 2-3 Date: October 2015

Topic/Subject

What are the roles of the human body systems?

Texts/Resources

Book(s)

1. 50 Body Questions: A Book that Spills its Guts

Article(s)

2. "Head to Toe: Did You Know"

3. "A Kid's Guide to Life Sciences: The Human Body Systems"

Video

4. "So Many Systems"

Other Media

- 5. "Animal Systems" (Website)
- 6. "How the Body Works" (Website)

Each expert pack contains a variety of selections grouped to create as coherent and gradual a learning process for students as possible, generally beginning with lower levels as measured by quantitative and qualitative measures, and moving to more complex levels in the latter selections. This gradated approach helps support students' ability to read the next selection and to become 'experts' on the topic they are reading about.

Refer to annotated bibliography on the following pages for the suggested sequence of readings.

Rationale and suggested sequence for reading:

In the first video, "So Many Systems," students are briefly introduced to each body system through song. The song defines each body system and its function. The next resource, "A Kid's Guide to Life Sciences: The Human Body Systems" defines the systems in student friendly terms. Students learn that body systems are made of smaller parts that work together. Students then begin to explore the human body systems by reading, "Animal Systems" furthering their understanding on how body systems depend on one another. Students then read excerpts from the book, 50 Body Questions, which provides a humorous twist on the systems encouraging students to seek more detailed information. "Head to Toe: Did You Know," provides students with interesting trivia facts relating to the human body. The expert pack culminates with an interactive website "How the Body Works", which immerses students in each body system with text, video, quizzes, and other activities.

The Common Core Shifts for ELA/Literacy:

- 1. Regular practice with complex text and its academic language
- 2. Reading, writing and speaking grounded in evidence from text, both literary and informational
- 3. Building knowledge through content-rich nonfiction

Though use of these expert packs will enhance student proficiency with most or all of the Common Core Standards, they focus primarily on Shift 3, and the highlighted portions of the standards below.

College and Career Readiness Anchor Standards for Reading Literary and/or Informational Texts (the darkened sections of the standards are the focus of the Expert Pack learning for students):

- 1. **Read closely to determine what the text says explicitly and to make logical inferences from it;** cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
- 2. **Determine central ideas or themes of a text** and analyze their development; summarize the key supporting details and ideas.
- 10. Read and comprehend complex literary and informational texts independently and proficiently

Annotated Bibliography and suggested sequence for reading

N/A "So Many Systems"

Author: Unknown

Genre: Informational video; includes graphics, animation, song, and focus on vocabulary

Length: 3:26

Synopsis: This video teaches about the human body systems including circulatory, digestive, endocrine,

nervous, skeletal, muscular, reproductive, and respiratory.

Citation: So Many Systems [Video file]. (April, 2012). Retrieved from

https://www.youtube.com/watch?v=0yjLJfz6saU

Cost/Access: \$0.00

Recommended Student Activities: Quiz Maker

950L "A Kid's Guide to Life Sciences: The Human Body Systems"

Author: Accuterm

Genre: Informational; article

Length: N/A

Synopsis: This abstract provides a student friendly definitions of each body system.

Citation: Accuterm (2015). "A Kid's Guide to Life Sciences: The Human Body Systems."

http://www.accuterm.com/life-sciences.html

Cost/Access: \$0.00

Recommended Student Activities: Pop Quiz

900L "Animal Systems"

Author: Unknown

Genre: Website; clear subject headings, focus on vocabulary, infographics

Length: N/A

Synopsis: Each section answers the following questions for each system: "what does this system do?" and "how does this system interact with other systems?" This website includes a quiz for each body system and provides detailed information on each system.

Citation: Animal Systems (2015). Retrieved September 9, 2015, from

http://www.biology4kids.com/files/systems main.html

Cost/Access: \$0.00

Recommended Student Activities: Interactive online quizzes

N/A 50 Body Questions: A Book That Spills Its Guts

Author: Tanya Lloyd Kyi

Genre: Informational; this title provides answers to 50 questions through seven cleverly titled chapters.

Length: 108 pages

Synopsis: Each chapter is dedicated to a different topic, such as "That Takes Guts" for digestion, "Blood Ties" for the brain and lung, and "Gray Matters" for the brain. While answers are brief and succinct, readers will find themselves amused by the witty illustrations and inspired to seek more detailed sources. Text boxes disguised as blood spatter "Body Bytes" and band aid—covered areas expand upon the answers and give information on key people and events. Each chapter concludes with a related "Body Busters" activity that can be completed with basic supplies, including making synthetic snot and testing balance and reflexes. A fun and quirky romp through human anatomy.—Meaghan Darling, Plainsboro Public Library, NJ

Citation: Kyi, Tanya Lloyd (2014). 50 Body Questions: A Book that Spills It's Guts. Annick Press.

Cost/Access: \$14.95

Recommended Student Activities: Body Buster Activities at the end of chapters or Picture of Knowledge

890L "Head to Toe: Did You Know"

Author: Unknown

Genre: Informational; facts are presented in list format

Length: 2 pages; 492 words

Synopsis: This article provides useful and interesting facts that spark student interest in the body systems.

Citation: "Head to Toe: Did You Know." Old Farmer's Almanac for Kids. 2013. Vol. 5, p186-187. 2p.

http://www.almanac.com/blog/everything-almanac-blog/head-toe-did-you-know

Cost/Access: \$0.00

Recommended Student Activities: Quiz Maker

N/A "How the Body Works"

Author: Kids Health

Genre: Website; interactive

Length: N/A

Synopsis: This website provides articles, movies, activities, quizzes, and word finds for each individual body

system. The site is interactive and animated.

Citation: How the Body Works (2015). Retrieved September 9, 2015, from

http://kidshealth.org/kid/htbw/

Cost/Access: \$0.00

Recommended Student Activities: Quizzes, Activities, and word finds found on the website

Supports for Struggling Students

By design, the **gradation of complexity** within each Expert Pack is a technique that provides struggling readers the opportunity to read more complex texts. Listed below are other measures of support that can be used when necessary.

- Provide a brief **student-friendly glossary** of some of the academic vocabulary (tier 2) and domain vocabulary (tier 3) essential to understanding the text
- Download the Wordsmyth widget to classroom computers/tablets for students to access student-friendly definitions for unknown words. http://www.wordsmyth.net/?mode=widget
- Provide brief student friendly explanations of necessary background knowledge
- Include pictures or videos related to the topic within and in addition to the set of resources in the pack
- Select a small number of texts to read aloud with some discussion about vocabulary work and background knowledge
- Provide **audio recordings** of the texts being read by a strong reader (teacher, parent, etc.)
- Chunk the text and provide brief questions for each chunk of text to be answered before students go on to
 the next chunk of text
- Pre-reading activities that focus on the structure and graphic elements of the text
- Provide volunteer helpers from the school community during independent reading time.

Text Complexity Guide

"Animal Systems" from Biology4Kids

1. Quantitative Measure

Go to http://www.lexile.com/ and enter the title of the text in the Quick Book Search in the upper right of home page. Most texts will have a Lexile measure in this database. You can also copy and paste a selection of text using the Lexile analyzer.

	2-3 band	420 -820L
	4-5 band	740 -1010L
900L	6-8 band	925 - 1185L
<u> </u>	9 -10 band	1050 - 1335L
	11 – CCR	1185 - 1385

2. Qualitative Features

Consider the four dimensions of text complexity below. For each dimension*, note specific examples from the text that make it more or less complex.

This text requires the reader to be able to put knowledge of individual body systems together to think about the system as a whole and how the individual systems are interconnected. The concept of regulation within a body system is complicated and somewhat difficult to understand.

Meaning/Purpose

Contains conventional structures such as headings and bolded vocabulary words. The text is supported by well-placed graphics. Includes a supporting video. Navigation on this site can be tricky. At the bottom of the first page students can choose between "next stop on site tour" or "next page on systems". You can also navigate using the side bar. There are a few distracting ads as well.

Structure

Language

There are many unfamiliar domain-specific vocabulary words within each of the systems such as homeostasis, acromegaly, actin, and myosin to name a few. While these are defined within the text there are so many that it makes reading this text difficult.

Knowledge Demands

The reader will need to hold on to information learned in each section and apply it to the next in order to understand how they all work together and are interconnected. The title of this site will require students to understand that this article is talking about humans.

3. Reader and Task Considerations

What will challenge students most in this text? What supports can be provided?

- Following the order of the text set will help students access this content rich text. After prior knowledge
 is gained through the other texts, students should be able to pull all of the learning together within this
 book.
- There is a glossary provided in this book to help students with some of the more complex vocabulary.
- Identifying complex sentence features could provide for needed additional instruction for the class.
- Identifying text features such as captions, maps, and legends could also give needed support.

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Learning Worth Remembering

<u>Cumulative Activities</u> – The following activities should be completed and updated after reading each resource in the set. The purpose of these activities is to capture knowledge building from one resource to the next, and to provide a holistic snapshot of central ideas of the content covered in the expert pack. *It is recommended that students are required* to complete one of the Cumulative Activities (Rolling Knowledge Journal or Rolling Vocabulary) for this Expert Pack.

1. Rolling Knowledge Journal

- 1. Read each selection in the set, one at a time.
- 2. After you read *each* resource, stop and think what the big learning was. What did you learn that was new *and important* about the topic from *this* resource? Write, draw, or list what you learned from the text about (topic).
- 3. Then write, draw, or list how this new resource added to what you learned from the last resource(s).

Sample Student Response

Title	Write, [Draw, or List
	New and important learning about the topic	How does this resource add to what I learned already?
1. "So Many Systems"	The body is made up of many systems. They are endocrine - has a whole bunch of glands- to regulate hormones, excretory - gets rid of waste your body it sees as poison , nervous - controls what you do- when to eat, what you feel, your brain tells you, reproductive - allows us to make life, digestive - breaking down food so we can be healthy, bringing in nutrients and energy to help me, respiratory - breathing to keep my cells alive- got to get that oxygen so my cells can thrive, circulatory - moves blood throughout your body,	I knew that our bodies were made up of different systems, but I did not know exactly how many systems that was.

	muscular – tissues in our body contract and relax tied together with tendons on the bone , skeletal - connected by your joints in your arms and legs and neck, the skeleton's main job is to protect!, immune - protects your body- keeping out germs and infections Each system has a function to perform to make the body work.	
2. "A Kid's Guide to Life Sciences: The Human Body Systems"	Each system is made up of smaller parts like cells, tissues, and organs and together they form a system.	I learned why it is important to take care of our bodies because everything is connected and if one part is neglected, it has an effect on the rest of our body as well.
3. "Animal Systems"	A system is a group of organs that work together and provide an organism with an advantage for survival. It is the most complex organization in your body and the final level of the progression from cells to tissues to organs and then systems. I also learned that systems can work alone or together.	I learned how different body systems depend on each other to function every day.
4. 50 Body Questions: A Book that Spills Its Guts	Each system works together to help a normal healthy person function every day. If you were missing a system, you would not be able to complete some task that you currently do today.	I learned that each body system is vital for a human to function properly.
5. Head to Toe! Did you Know?	The funny bone isn't a bone at all. It's a nerve that runs from the elbow to the fingers. The ulnar nerve tingles when bumped against the humerus, the long bone that goes from the elbow to the shoulder.	Not only did I learn about the funny bone, I learned other interesting facts about the human body.
6. "How the Body Works"	Choose 5 items from this interactive lesson and tell which system it belongs to and why.	I learned what body systems are and how they work together. I can use characteristics to relate everyday body parts to the body system in which they belong to.

2. Rolling Vocabulary: "Sensational Six"

- Read each resource then determine the 6 words from each text that most exemplify the central idea of the text.
- Next use your 6 words to write about the most important idea of the text. You should have as many sentences as you do words.
- Continue this activity with EACH selection in the Expert Pack.
- After reading all the selections in the Expert Pack, go back and review your words.
- Now select the "Sensational Six" words from ALL the word lists.
- Use the "Sensational Six" words to summarize the most important learning from this Expert Pack.

	Six Vocabulary Words & Sentences
"So Many Systems"	Words: systems, immune, nutrients, toxins, tissue, tendons
	Sentences:
	1. There are so many systems in the human body and each of those systems have a job.
	2. The <u>immune system</u> protects the body from harmful illnesses.
	3. The digestive system breaks down and brings in <u>nutrients</u> to make us healthy.
	4. Systems pass on nutrients and take out toxins that are harmful to our bodies.
	5. The muscular system is made of <u>tissues</u> .
	6. Tissues are made of cells and <u>tendons</u> that are tied together to the bones to keep our
	skeletons intact.
"A Kid's Guide to Life	Words: connectors, function, chemicals, substances, transport, expel
Sciences: The Human	
Body Systems"	
	Sentences:
	1. There are eight body systems and each of the body systems has a specific
	function.
	2. The Nervous System has connector neurons (nerves) that communicate by
	sending messages throughout the body.
	3. The endocrine system has glands that are in charge of moving chemicals and
	hormones through the body. Different chemicals are created and changed
	throughout the body by various systems.
	4. The skin is an organ that is part of the immune system and it keeps harmful
	substances out of the body and holds helpful substances in.
	5. The circulatory system works as the body's transport system and it is made up of
	a group of organs that <u>transport</u> blood throughout the body. T
	a group of organs that transport blood throughout the body. I

	6. The excretory system expels chemicals, toxins, and waste by using organs
	(kidney, liver, and skin).
"Animal Systems"	Words: organ, organism, classified, aquatic, cells, collagen
,	
	Sentences:
	1. An animal body system is a group of <u>organs</u> that work to help an animal or organism
	survive.
	2. Organisms have body systems with certain cells or tissues that have specific functions or
	jobs.
	3. There are many organ systems found in the animal kingdom and they are <u>classified</u> or placed into different groups.
	4. Land and water mammals have organ systems that help them adapt and survive in their
	environment. For example, <u>aquatic</u> or water animals have special organs that remove
	salt from salt water.
	5. <u>Cells</u> are the smallest part of body systems that hold biological equipment that
	organisms need to stay alive.
	6. Connect tissues like <u>collagen</u> help the body heal broken bones and damaged tissue.
50 Body Questions: A	Words: bile, cerebral cortex, diaphragm, marrow, mucus, trachea
Book that Spills Its	
Guts	
	Sentences:
	1. <u>Bile</u> is a thick yellow or greenish fluid produced by the liver to help the body
	digest fats in the small intestine.
	2. The gray matter or <u>cerebral cortex</u> , is the brain's outer layer and it helps us
	process information.
	3. When the <u>diaphragm</u> (dome shaped muscle that helps you breathe) gets
	irritated it forces air from your lungs in a funny way.
	4. Bone marrow is a thick, spongy kind of jelly inside your bones and it makes all
	kinds of blood cells.
	5. When you think of mucus or snot is that sticky stuff inside your nose but you will
	also find it in your mouth, lungs, stomach, and intestines. Mucus protects and
	lubricates mucous membranes in your body.
	6. The trachea or windpipe carries air in and out of your lungs.
"Head to Toe: Did you	Words: trimmed, vessels, retina, mature, ulnar nerve, humerus
Know"	
	Sentences:
	These are some of the interesting facts about the human body systems
	There are five million hairs of the human body and if a man never trimmed his facial
	hair or beard it would grow to be 30 feet.

	2. A human brain has 400 miles of blood <u>vessels.</u>
	3. The <u>retina</u> (part of the eye) has 130 million light sensitive cells and it is only the size of a
	postage stamp.
	4. Mature adults (grown-ups) have 200 bones but babies have 206 bones.
	5. The funny bone is really a nerve called <u>ulnar nerve</u> that stretches from the elbow to the
	fingers.
	6. It reaches across the humerus (long bone that goes from elbow to shoulder) and it
	tingles when it is bumped.
"How the Body	Words: diagram, flexible, anchored, microscopic, infections, bladder
Works"	
	Conton
	Sentences:
	1. The <u>diagram</u> shows each part of the body system.
	2. The skeletal muscles make the bones <u>flexible</u> by allow us to flex and move our skeletal
	system. The tongue is also a <u>flexible</u> muscular organ in the mouth.
	3. Skeletal muscles are firmly <u>anchored</u> to the skeleton.
	4. There are visible and microscopic parts of each body system. Cells (building blocks)
	make up tissues which make up organs are microscopic and can only be seen with a
	microscope.
	5. The immune system fights <u>infection</u> in the human body.
	6. Smooth muscles are also found in your <u>bladder</u> and when they are relaxed they help
	you hold in urine until you can go to the bathroom.
Sensational Six	systems, function, chemicals, organs, cells, transport, expel

Summary:

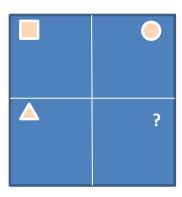
The human body is made of many <u>systems</u>. These body systems are constructed of <u>cells</u> which form tissues to create organs. The eight body systems have different f<u>unctions</u>. Body systems <u>transport chemicals</u> throughout the body to help it survive. Harmful chemicals are <u>expelled</u> by body systems.

Learning Worth Remembering

<u>Singular Activities</u> – the following activities can be assigned for each resource in the set. The purpose of these activities is to check for understanding, capture knowledge gained, and provide variety of ways for students to interact with each individual resource. Students may complete some or none of the suggested singular activities for each text. Singular activities should be assigned at the discretion of the teacher.

- 1. A Picture of Knowledge (Recommended for 50 Body Questions: A Book that Spills Its Guts)
- Take a piece of paper and fold it two times: once across and once top to bottom so that it is divided into 4 quadrants.

• Draw these shapes



- 1. Square
- 2. Triangle
- 3. Circle
- 4. Mark

Write!

Square: What one thing did you read that was interesting to you?

Triangle: What one thing did you read that taught you something new?

Circle: What did you read that made you want to learn more?

Question Mark: What is still confusing to you? What do you still wonder about?

- Find at least one classmate who has read [selection] and talk to each other about what you put in each quadrant.
- 1. Quiz Maker (Recommended for "So Many Systems" and "Head to Toe: Did you Know")
 - Make a list of # questions that would make sure another student understood the information.
 - Your classmates should be able to find the answer to the question from the resource.

•	Include	answers	for	each	question
---	---------	---------	-----	------	----------

• Include where you can find the answer in the resource.

Question	Answer
1.	
2.	
3.	

2. **Pop Quiz** (Recommended for "A Kid's Guide to Life Sciences: The Human Body") Answer the following questions.

Qu	estion	Possible Answer	
1.	What is the largest function of the nervous system?	The brain.	
2.	Explain what a gland is.	A bunch of cells that release chemicals	
3.	Which organ keeps harmful substances out of the body and beneficial substances in?	The skin.	
4.	List the human body systems.	Nervous, Circulatory, Skeletal, Excretory, Muscular, Digestive, Immune, Endocrine, Respiratory.	
5.	Choose one body system and explain why it is important.		

Expert Pack: Body Systems

Submitted by: West Elementary, Gulfport School District, MS Grade: 2-3 Date: October 2015

Expert Pack Glossary

"So Many Systems"

Word	Student-Friendly Definition
	A group of related things or parts that work together as a whole.
Systems	The human body systems work together to keep your body functioning
	properly.
	To be protected from disease.
Immune	I had chicken pox as a child, so I'm sure I'm immune to it now.
	Things that nourish.
Nutrients	Nutrients are found in food.
	A muscular tube that takes food from our mouths to our stomach.
Esophagus	The spicy food burns my esophagus on the way to my stomach.
	A pair of organs located high in the abdominal cavity near the spine which
Kidneys	remove waste products from the blood and excrete them in urine.
	The kidneys are an essential part of the excretory system.
	A group of poisonous substances secreted by microorganisms.
Toxins	These bacteria secrete toxins that can cause illness.
	A colorless, odorless gas essential to the respiration of living things. We
Oxygen	breathe oxygen into our lungs.
	A mass of like cells in an animal or plant body.
Tissue	Cells form a specific organ like heart tissue .
	A cord or band of tough white fibrous tissue that connects a muscle with a
Tendons	bone or other part.
	The runner pulled a tendon and will need weeks to recover.

"A Kid's Guide to Life Sciences: The Human Body Systems"

Word	Student-Friendly Definition
Connectors	To join together or link. Ligaments are connectors found in the body.
Neurons	A single nerve cell. Neurons send messages to the brain.
	To do some kind of work.

or cells that produce secretions in a living thing. u are sick, your glands will swell. in plants and animals by which food is changed into energy or
in plants and animals by which food is changed into energy or
ells and tissues.
cise, our rate of metabolism increases.
ed in or made by a chemical process.
mful chemical to the human body when inhaled over long
orless, gas.
ne in oxygen and exhale carbon dioxide .
ng is made of.
substances can enter your body through food and germs.
or favorable affect; helpful.
d vegetables is beneficial to the human body.
one place to another.
ransport blood throughout the body.
rcibly.
pelled air when she sighed.
uid or other substance and release it into or out of the body.
es salt when you sweat.

"Animal Systems"

Word	Student-Friendly Definition
	A group of tissues in a living organism that has a specific form and
Organ	function.
	Organs are grouped together into organ systems.
Organism	A living thing that can function on its own.
	An organism includes your pet guppy, the tree in your backyard, and — of
	course — you.
Survival	A state of remaining alive.
	A living thing needs certain things for survival .
Classified	Arranging things in groups with similar things.
	Every known living organism on Earth is classified and named by a set of
	rules.
	Living or found near water.
Aquatic	Aquatic plants or animals live in ponds, lakes, and other bodies of water.
Pupils	The opening in the iris through which light enters the eye.
	Your pupils get larger in a dark room and smaller in a lighted room.

Absorb	To take in liquid in a gradual or natural way. Your body absorbs water. A towel absorbs water.
	, ,
	The basic structural and functional unit of all organisms.
Cells	Cells may exist as independent units or in colonies or tissues.
	A fibrous protein found in bone, cartilage, tendons and other connective
Collagen	tissue.
	Collagen is the most abundant protein in the human body and is the
	substance that holds the whole body together.
	Part of the body excluding the head, neck and limbs.
Torso	Your torso is shaped like a rectangle.

50 Body Questions: A Book that Spills Its Guts

Word	Student-Friendly Definition
Alveoli	Tiny sacs inside your lungs, where red blood cells pick up oxygen and drop off carbon dioxide.
	Alveoli are found in the lungs of mammals.
Bile	A yellow brown goo produced by your liver.
	Bile helps the body digest fat.
Cerebral cortex	The top layer of your brain, and the outside layer of your cerebrum.
	Most of your thinking occurs in the cerebral cortex .
	The big muscle along the bottom of your rib cage.
Diaphragm	Your diaphragm contracts when you inhale.
Marrow	The soft tissue inside of bones.
	Blood cells are made inside the marrow .
Mucus	A slippery goo that coats the inside of your respiratory and digestive tracts
	to help protect the tissues underneath.
	Mucus comes out of your nose when you blow it.
scurvy, smallpox, polio	These are different diseases or illnesses.
	Scurvy, smallpox, and polio are very dangerous diseases.
	Your windpipe.
Trachea	The trachea carries air down your throat toward your lungs.

"Head to Toe: Did You Know"

Word	Student-Friendly Definition
Trimmed	To make neat, orderly, or manageable by cutting, clipping, or otherwise removing excess material.
	The man trimmed his beard to make it shorter.

Vessels	A tube-shaped structure through which blood and other bodily fluids are carried; artery; vein.
	The aorta is a large blood vessel that leads from the heart. Both veins and arteries are vessels through which blood flows.
	The part of the eye at the back of the inside of the eyeball.
Retina	The human retina has over 100 million photoreceptors.
	Fully grown or developed, as a plant, animal, or human.
Mature	As you grow parts of your body mature at different times.
	Bundles of fibers forming a system that carries stimuli and impulses to and
Ulnar nerve	from the brain and other parts of the body.
	A pinched ulnar nerve can cause a lot of pain for a person.

"How the Body Works"

Word	Student-Friendly Definition
	A drawing or plan that shows the parts of something or how the parts
Diagram	work together.
	He drew a diagram to show me how my eye works.
	Easily bent without breaking.
Flexible	Our bones are not very flexible.
Anchored	Held in place.
	Our tongue is anchored to our mouth.
	Too small to be seen with the eye.
Microscopic	Viruses are microscopic.
Infections	A germ or sickness that causes something to be infected.
	Everyone in school is sick from an infection.