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Diving Deeper with Data

The Body and Its Systems: Spotlight on Asthma

Ashley Aliengena & Aliza Ansell

Holyoke Community College Adult Learning Center
Holyoke, MA

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Introduction

Unit Summary

Research indicates that asthma is more prevalent in low income communities and in communities with large populations of people of color. But all too often our students are unaware of the physiology of asthma. Nor do many of our students know how to gather, analyze, and interpret the data that would inform them about a problem that is rampant in their communities. The content of this unit will allow students to better understand the human body, in particular the role and functioning of the lungs. It will also introduce students to the critical thinking skills and background knowledge that is necessary to interpret asthma-related data. Students will be introduced to health-related careers, and they will practice the computer literacy, and oral and written communication skills that are necessary to enter those careers.

The unit begins with a focus on the lungs and on body systems. Students will learn about the role and functioning of the lungs. Students will build models of healthy lungs and of asthmatic lungs, and study how asthma affects the lungs and the body as a whole.

From there we will examine authentic data about asthma locally, and in Massachusetts in general. We will correlate incidence of asthma with geographic and socio-economic data. We will create, and analyze and interpret visual representations of the data in order to develop connections, make predictions and inferences, and draw conclusions.

The unit will conclude with health career related information, including a presentation by a local health center practitioner. Throughout the unit students will practice computer literacy and language arts skills, as well as critical thinking skills, using asthma and its context as a platform for studying personal and community health, data-based decision making, and health careers.

¹ CDC National Asthma Control Program: <http://www.cdc.gov/asthma>, <http://www.mass.gov/dph/asthma>.

This curriculum unit is based on the following MCCWDTA Module:

“Making Decisions with Data”

<http://mccwdta.etlo.org/module/making-decisions-data>

Lesson Plan Overview

Lesson 1: Human Body Systems and Organs

Lesson 2: Asthma and the Lungs

Lesson 3: Exploring Asthma Data and Data-related Careers

Notes on Lesson Activities and Attachments

- Each lesson is designed for a 3-hour Science class, with integrated Math and ELA skill building. Suggested extensions for further incorporating computer literacy and career awareness activities have also been included.
- All lesson plan attachments (including handouts, worksheets, and additional resources) may be found in the appendices located at the end of the unit.

Standards

Adult Basic Education (ABE) Standards

Statistics and Probability *

S-1: Collect, organize and represent data

S-1.3: Represent information so that it makes sense to others.

S-2: Read and interpret data representations

S-2.4: Extract simple information from a list or table.

S-3: Describe data using numerical descriptions, statistics and trend terminology

S-4: Make and evaluate arguments or statements by applying knowledge of data analysis, bias factors, graph distortions and context

S-4.3: Visually identify “who has more,” and use some numbers to compare quantities.

S-4.4: Support simple statements with data.

S-4.5: Use “most of” statements to support arguments.

* Drawn from MCCWDTA Module, “Making Decisions with Data”

Lesson 1: Human Body Systems and Organs

Summary

In this lesson students will study the human body with special emphasis on the lungs. In order to understand the role of the lungs in the body, it is necessary to understand how the lungs work in conjunction with the body as part of a whole integrated system.

Learning Objectives

- Students will be able to identify and label a diagram of the body's major organs.
- Students will be able to explain that the body's organs work together in systems
- Students will be able to describe the functions of the major organs

Activity 1: Pre-Assessment

Time	Supplies & Materials	Description
15 minutes	<ul style="list-style-type: none">• Post-it notes• Flip-chart (or similar) for collecting and setting aside post-its	<p>Invite students to respond to the following question:</p> <p>“What do you think you know about human organs and their functions?”</p> <p>On individual Post-Its, invite students to list an organ, and describe its function. Students should list as many organs as they can think of, one organ per Post-It, along with its function. Remind students it is fine to write whatever they think they know. This is not a test, it is a pre-assessment.</p> <p>Place the student generated Post-Its on flip chart paper labeled Pre-Assessment. Keep this Pre-Assessment sheet available for review at the end of the lesson.</p>

Activity 2: Watch Human Body Video & Take Notes

Time	Supplies & Materials	Description
30 minutes	<ul style="list-style-type: none">Worksheet: Major Organs of the Human Body (<i>Appendix A</i>)	<p>Watch: “Major Organs in the Human Body” (YouTube) http://www.youtube.com/watch?v=Hgm8-xeiBpA</p> <p>Facilitate a discussion on the role of the organs in the human body and how they function as a system. The organs do not work independently, but as a unified system.</p>

Activity 3: Drop & Drag Organs (Extension)

Time	Supplies & Materials	Description
Extension Activity 30 minutes	<ul style="list-style-type: none">Computer and Internet Access	<p>Have students visit this BBC website, which allows them to manipulate an interactive 3D animation of the human body, and restore organs to their rightful place in the body.</p> <p>http://www.bbc.co.uk/science/humanbody/body/interactives/3djigsaw_02/index.shtml?organs</p>

Activity 4: Become an Organ

Time	Supplies & Materials	Description
45 minutes	<ul style="list-style-type: none">Organ handouts for “become an organ” activity (<i>Appendix B</i>)	<p>4.1: Small Group Work</p> <p>Students will work in groups to review the list of major organs. They will be encouraged to take notes on the organs as they work.</p> <p>4.2: Many Organs, One Body (Add-on Tableau)</p> <p>Once students know some of the organs and a bit about their functions, assign individual organs to students to become or act out.</p> <p>Invite students to read laminated descriptions of each organ. When students feel they understand their organ’s function, invite them to act out the role of the organ. While in the role of the organ,</p>

		<p>encourage students to explain what they do in the body and how they help the system as a whole. Students are welcome to use the laminated card with the description if necessary.</p> <p>One at a time, each student/organ will come forward and find its place. They will continue to add-on organs, positioned in relation to each other, until all organs are “assembled” and a “body” has been formed.</p>
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Activity 5: Post-Assessment

Time	Supplies & Materials	Description
15 minutes	<ul style="list-style-type: none"> • Post-it notes 	<p>On Post-Its, invite students to list the organs in the human body, and the role and function of the organ.</p> <p>Compare these Post-Its to the Pre-Assessment Post-Its. Discuss with students what they have learned.</p>

Lesson 2: Asthma and the Lungs

Summary

This lesson shifts from looking at the whole body, to focusing on the respiratory system and asthma. Students will learn about the many environmental factors that can trigger asthma. With a thorough grasp of asthma, students will have a better understanding of the condition when they start working with asthma data in Lesson 3.

Learning Objectives

- Students will be able to describe how healthy lungs function.
- Students will be able to describe how asthma affects the lungs.
- Students will be able to describe causes and triggers of asthma.
- Students will build models of healthy and asthmatic lungs.
- Students will explore the correlation between the numbers of cases of asthma and locations with high concentration of pollutants.

Activity 1: Pre-Assessment

Time	Supplies & Materials	Description
15 minutes	<ul style="list-style-type: none"> • Post-it notes • Flip-chart (or similar) for collecting and setting aside post-its 	<p>Invite students to respond to the following question:</p> <p>“What do you think you know about asthma, asthma attacks, and the irritants that can provoke an asthmatic episode?”</p> <p>On individual Post-Its, invite students to write their responses. Have them use a single Post-It for each response.</p> <p>Place student generated Post-Its on flip chart paper labeled Pre-Assessment. Keep this Pre-Assessment sheet available for review at the end of the lesson.</p>

Activity 2: “What is Asthma?” Close Reading & Vocabulary in Context

Time	Supplies & Materials	Description
30 minutes	<ul style="list-style-type: none"> • Reading Passage: “What is Asthma?” (<i>Appendix B</i>) 	<p>2.1: Teacher Gives Brief Introduction to Asthma</p> <p>2.2. “What is Asthma?” Close Reading & Vocabulary in Context Activity</p> <p>The class will read the first paragraph together, and the teacher will model how to determine the meaning of bold, underlined words by using context clues from surrounding words and sentences.</p> <p>Students will read the rest of the article independently, writing their own definition of each bold, underlined word. They will be encouraged to highlight, circle, or underline the context clues that brought them to their definition.</p> <p>Either in pairs or as a class, compare definitions.</p>

Activity 3: Watch & Discuss Asthma Animation Videos

Time	Supplies & Materials	Description
30 minutes	<ul style="list-style-type: none"> • Computer and Internet Access • Projector (preferable) 	<p>3.1: Watch Asthma Animation Videos</p> <ol style="list-style-type: none"> http://youtu.be/S04dci7NTPk (animation, short, beginner level video) http://youtu.be/4aK76DoxKGk (animation, (more in-depth video) http://www.youtube.com/watch?v=7EDo9pUYvPE (good animation, good visuals) http://noattacks.org/breathe-easies (kid-friendly, “no mold” video by EPA)
15 minutes		<p>3.2: Lead Post-Video Discussion</p> <p>Discussion Prompts:</p> <ul style="list-style-type: none"> • What is Asthma? • What causes Asthma? • What effect does Asthma have on the lungs? • What are natural and man-made irritants/triggers of Asthma? • Can Asthma be cured?

Activity 4: Take Online Asthma Quiz (Extension)

Time	Supplies & Materials	Description
15 minutes	<ul style="list-style-type: none"> • Computer and Internet Access 	<p>After viewing videos and discussion, take online Asthma Quiz. Repeat the quiz until students score 100%.</p> <p>http://epa.gov/asthma/take_a_quiz.html</p>

Activity 5 Build a Model Respiratory System & Discuss

Time	Supplies & Materials	Description
60 minutes	<ul style="list-style-type: none"> • Instruction Guide for Build-a-Lung activity (<i>Appendix 2</i>) • To build one model, you will need: <ul style="list-style-type: none"> ○ 2 liter soda bottle ○ Scissors ○ 2 straws ○ 2 balloons ○ 3 rubber bands ○ Clay ○ Piece of clear wrap paper ○ Binder clip • Note: For healthy set of lungs, use regular or large straws. For asthmatic lungs, use coffee stirrer straws . 	<p>6.1: Build Model Respiratory System with Recyclables</p> <ol style="list-style-type: none"> a. Watch “Building a Model Lung” video with students. http://www.youtube.com/watch?v=CBv2BqqAydE b. Assist students to building lungs. Discuss the role of the diaphragm in breathing. c. Optional: When passing out supplies, give half of the class regular straws and half of the class narrow, coffee stirrer straws. Narrow straws allow less air to pass through, which mimics the constriction of the bronchial chords during an asthma attack. Challenge the students to think of other ways they might change the model’s design . <p>6.2: Debrief & Discuss After Building Models</p> <p>Discussion Questions:</p> <ul style="list-style-type: none"> • Can you describe how healthy lungs function? • How does the diaphragm assist in breathing? • How might Asthmatic lungs affect the system as a whole? • What are some ways people suffering from Asthma find relief? • What are some of the triggers for people suffering from Asthma? • Is there a correlation between areas with a lot of pollutants in the air and number of cases of asthma?

Activity 6: Post-Assessment

Time	Supplies & Materials	Description
15 minutes	• Post-it notes	<p>On Post-Its, invite students to revisit the Pre-Assessment question,</p> <p>“What do you think you know about asthma, asthma attacks and irritants that can provoke an asthmatic episode?”</p> <p>Compare the Post-Assessment to Pre-Assessment Post-Its. Discuss with students what they have learned.</p>

Lesson 3: Exploring Asthma Data and Data-Related Careers

Summary

In this lesson students will participate in an asthma survey, and learn about careers that involve working with data. They will review and analyze asthma statistics from a Massachusetts. Students will learn to interpret the data, make predictions and draw conclusions based on the data, and make connections between geographic regions, the socio-economics of an area, and the number of asthma cases reported in Massachusetts.

Students will also be encouraged to synthesize the information from the previous lessons covering the human body and asthma, with the data on asthma to draw conclusions, make predictions, and use critical thinking skills to ask more informed questions.

Students will be encouraged to expand their awareness of the human body, health issues in their communities, data analysis and the political, social and economic implications of the cost of asthma in low-income communities.

Learning Objectives

- Students will be able to describe at least one career that involves working with data.
- Students will create a bar graph from survey data.
- Students will be able to accurately describe their bar graphs and articulate the findings of their survey in writing.
- Students will be able to make inferences, and support simple statements with data.

Activity 1: Pre-Assessment

Time	Supplies & Materials	Description
15 minutes	<ul style="list-style-type: none">• Post-it notes• Flip-chart (or similar) for collecting and setting aside post-its	<p>Invite students to respond to the following question:</p> <p>“What do you think you know about data the kind of jobs involve working with data?”</p> <p>On individual Post-Its, invite students to write their responses. Have them use a single Post-It for each response.</p> <p>Place student generated Post-Its on flip chart paper labeled Pre-Assessment. Keep this Pre-Assessment sheet available for review after the lesson.</p>

Activity 2: Opening “Brainstorm” / Discussion about Data

Time	Supplies & Materials	Description
20 minutes		<p>Define <i>data</i>, and engage students in a discussion about what they think know about it.</p> <ul style="list-style-type: none">• Who collects data? Why?• What are some ways that data is gathered?• Have students ever been taken part in a survey?• What are some jobs that involve working with data?

Activity 3: Class Survey (Data Collection and Compilation)

Time	Supplies & Materials	Description
20 minutes	<ul style="list-style-type: none"> • Survey Handout (<i>Appendix C</i>) • <i>See Additional Resources for links to job descriptions for data-related jobs mentioned here</i> 	<p>3.1: Conduct Survey (Career Role Play)</p> <ul style="list-style-type: none"> • Teacher acts as a <i>field data collector</i> for the MA Department of Health. She has come to the class to survey them about Asthma. She is writing a report about the Issue of Asthma in the state. Students should know that as survey participants, they comprise the data collector's <i>sample population</i>.) <p>3.2: Compile/Tally Survey Results</p> <ul style="list-style-type: none"> • Connect to job fields such as data entry, medical billing • Response Tallies will be used to create bar graphs of the class survey data.

Activity 4: Visualize & Interpret Class Survey Data

Time	Supplies & Materials	Description
45 minutes	<ul style="list-style-type: none">• Bar graph template worksheet (<i>Appendix C</i>)• Students may want to use rulers and different colors when making their graphs, to help with neatness and readability.	<p>5.1: Create Bar Graphs</p> <p>Using data from Question #1 on the class survey, the teacher will explain and model how to graph the information, being sure to define each part of the graph and its function.</p> <p>Students will practice on their bar graph template worksheets, and graph data from Question #2 independently.</p> <p>Computer Literacy Extension Activity: Students may also use Create-a-Graph, a user- and kid-friendly website from the <i>National Center for Education Statistics</i> (NCES) that allows you to make, download, or print many kinds of Graphs. This website is also a good source of clear definitions and explanations for the parts of a graph.</p> <p>http://nces.ed.gov/NCESKIDS/createagraph/default.aspx</p>
20g.. minutes		<p>5.2: Analyze and Interpret Bar Graphs</p> <p>To ensure that students are reading and interpreting the bar graph correctly, have them do the following:</p> <ol style="list-style-type: none">1. For each survey question represented on the graphs, circle the response chosen by the majority (most) of the class. The response with the least is the minority.2. Articulate your findings: Write two correct “most of” statements for your graph. <p>(Ex: “Most of the class knows someone with Asthma.”</p>

Activity 6: Making Inferences with MA Dept. of Health Asthma Statistics

Time	Supplies & Materials	Description
45 minutes	<ul style="list-style-type: none">Handout of statistics taken from the 2009 Massachusetts department of Health Report on the Burden of Asthma in MA (<i>Appendix C</i>)	<p>Data and Statistics can be a very persuasive way to support an argument. When we make inferences from data, we follow logical steps and use reason to reach a conclusion.</p> <p>Have students work in pairs to complete the “Making Inferences” worksheet by matching each statistic to the point it supports. Use context clues from the sentences to find the right pairs.</p>

Activity 7: Post-Assessment

Time	Supplies & Materials	Description
10 minutes	<ul style="list-style-type: none">Index cards or printed exit tickets	<p>Before they leave class, have students fill out an “exit ticket” with their answers to the following questions:</p> <ol style="list-style-type: none">1. What is one thing you learned about how or why data is collected?2. What is one example of a job that involves working with data? Describe what kinds of activities a person with this job would do.

Appendices

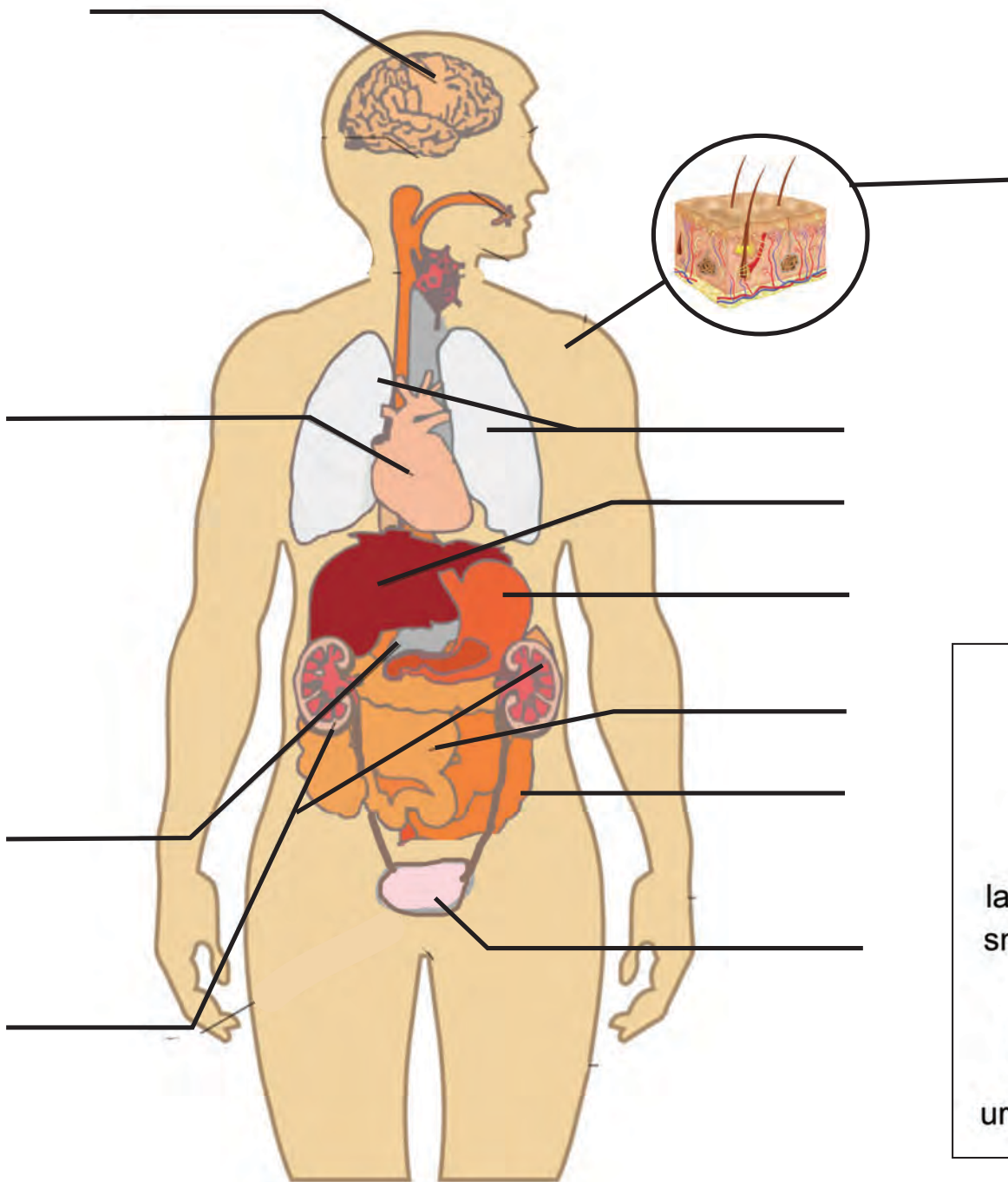
Appendix A: Lesson 1 Attachments

Name _____

Date _____

Major Organs of the Human Body

Directions: Label each organ with its name.



WORD BANK

skin
brain
heart
kidneys
liver
large intestine
small intestine
lungs
pancreas
stomach
urinary bladder

Great website for simple explanation and visuals of organs placement in the body and function: http://www.innerbody.com/image_digeov/card10-new2.html
List of organs in the body:

What are the human organs and their function?

BLADDER -A hollow muscular organ that stores urine before expelling it from the body.

BONES - The bones provide 5 functions. They protect other vital organs, i.e. ribs protect the lungs. Support the body in an upright position. They are attached to muscles to help provide movement of the body. Bone marrow produces blood. Store salts inside provides a mineral reservoir for the body.

BRAIN -The brain is the master control center of the body. It receives information through the senses from inside and outside of the body. It analyzes this information then sends messages to the body that controls its functions and actions. The brain remembers past experiences, is the source of thought, moods, and emotions.

EARS - The ear converts sound which enters the ear canal, from mechanical vibrations into electrical signals that the brain interprets. The ear also contains a fluid that is vital for balance.

ENDOCRINE SYSTEM -The endocrine system is a collection of glands that secrete chemical messages called hormones. The hormones pass through the blood to the target organ resulting in a chemical change in the body.

EPITHELIAL TISSUE -Membranous tissue composed of one or more layers of cells forming the covering of most internal and external surfaces of the body and its organs.

EYES -The eyes collect light and then sends a message to the brain for integration.

GALL BLADDER -A small, pear-shaped muscular sac, located under the right lobe of the liver, in which bile secreted by the liver is stored until needed by the body for digestion.

HEART -The chambered muscular organ that pumps blood received from the veins into the arteries, thereby maintaining the flow of blood through the entire circulatory system to supply oxygen to the body.

KIDNEYS -A pair of organs functioning to maintain proper water and electrolyte balance, regulate acid-base concentration, and filter the blood of metabolic wastes, which are then excreted as urine.

LARGE INTESTINES -Beginning with the cecum and ending with the rectum; includes the cecum and the colon and the rectum; extracts moisture from food residues which are later excreted as feces

LIVER -A large, reddish-brown, organ located in the upper right portion of the abdominal cavity that secretes bile and is active in the formation of certain blood proteins and in the metabolism of carbohydrates, fats, and proteins.

LUNGS -Either of two spongy, saclike respiratory organs in most vertebrates, occupying the chest cavity together with the heart and functioning to remove carbon dioxide from the blood and provide it with oxygen.

MOUTH -The body opening through which an animal takes in food.

MUSCLES - A tissue composed of fibers capable of contracting to effect bodily movement.

NERVOUS SYSTEM -The system of cells, tissues, and organs that regulates the body's responses to internal and external stimuli. In vertebrates it consists of the brain, spinal cord, nerves, ganglia, and parts of the receptor and effector organs.

NOSE -The part of the human face or the forward part of the head of other vertebrates that contains the nostrils and organs of smell and forms the beginning of the respiratory tract.

PANCREAS -A long, irregularly shaped gland in vertebrates, lying behind the stomach that secretes pancreatic juice into the duodenum and insulin, glucagon, and somatostatin into the bloodstream.

SKIN -The membranous tissue forming the external covering or integument of an animal and consisting of the epidermis and dermis.

SMALL INTESTINES -The upper portion of the bowel, in which the process of digestion is practically completed. It is narrow and contorted, and consists of three parts, the duodenum, jejunum, and ileum.

SPINAL CORD -The thick, whitish cord of nerve tissue that extends from the medulla oblongata down through the spinal column and from which the spinal nerves branch off to various parts of the body.

STOMACH -The enlarged, saclike canal, one of the principal organs of digestion, located between the esophagus and the small intestine.

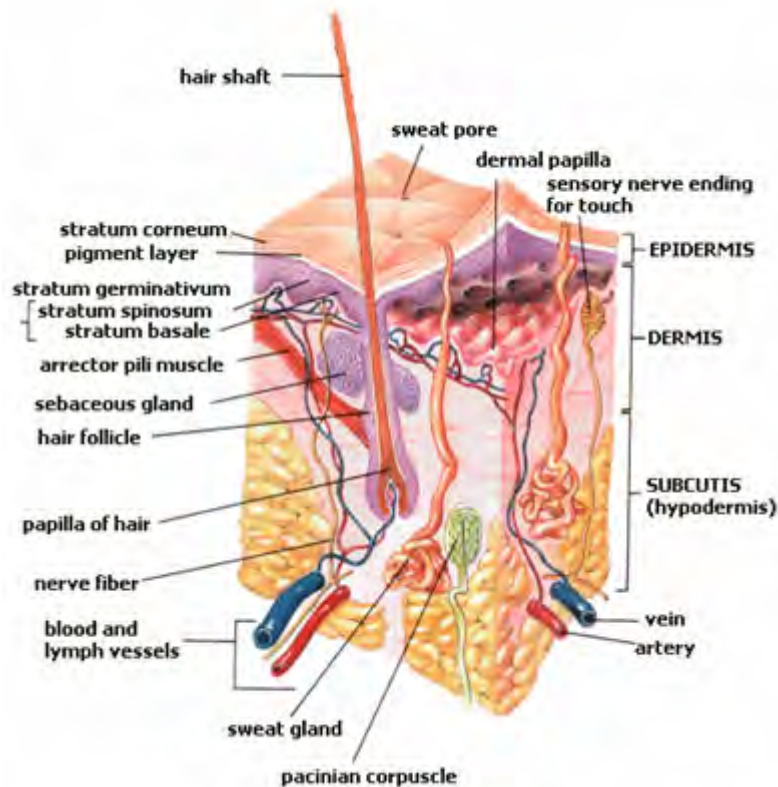
TONGUE -The fleshy, movable, muscular organ, attached in most vertebrates to the floor of the mouth, that is the principal organ of taste, an aid in chewing and swallowing, and, in humans, an important organ of speech.

Featured Organs:

Skin, Brain, Heart, Kidneys, Liver, Large Intestine, Lungs, Pancreas, Small Intestine, Stomach

Skin

The skin is the largest organ in the human body. Its main job is to maintain the body's temperature, which means that sweat is created to cool the body, and goosebumps or raised hair occur to trap heat in the body. Along with sweat glands, the skin contains oil glands. The oil your skin releases helps to keep your skin from drying out and your hair from becoming brittle. The skin also regularly sheds cells to maintain its effectiveness. If you can imagine, there are about 19 million skin cells in every square inch of the human body!



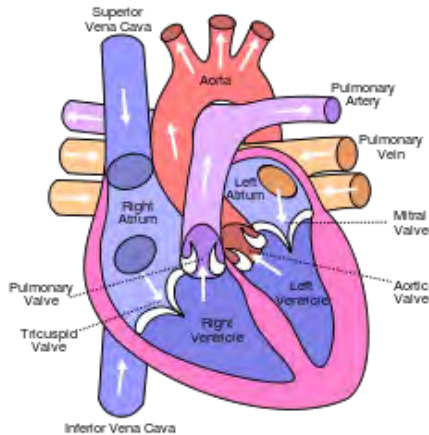
Brain



The brain is the controller of your body, and **stores information**, allows you to think and learn, as well as controls vital daily functions, like digestion, heart rate, and breathing. The brain receives impulses from your nerves, which are located throughout your body and respond to pain and other stimulation. Even though the brain is so important, it is also very delicate. The brain is made of soft tissue and is protected only by the skull, which is why head injuries can be so serious. The average adult brain weighs 3 pounds.

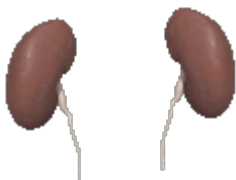
Heart

The heart is another vital organ. The heart's job is to pump oxygenated blood throughout your body and receive deoxygenated blood back in return. Without your heart, your other organs would not receive oxygen or have carbon dioxide removed. In an average lifetime, the heart beats more than 2.5 million times!



Kidneys

The kidneys are located under the ribcage in your lower back. The job of the kidneys is to filter things like water and salts out of your blood and to produce urine. The kidneys also produce an enzyme called renin. This enzyme plays a big role in regulating your blood pressure. Did you know that a **healthy person** is able to live with only kidney?



Liver

The liver is located in the upper abdomen, slightly more to the left side. The main job of the liver is to produce bile, which it sends to the stomach for digestion. The liver also filters out toxins and regulates blood sugar. Blood sugar is regulated because the liver converts sugars and stores them, releasing them when more sugar is needed in the blood. The liver is also in charge of releasing cholesterol, breaking down fats, and producing blood proteins. It is the largest internal organ!

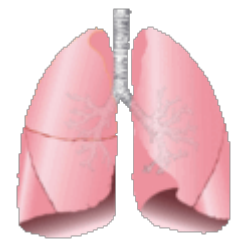


Large Intestine

The large intestine is located in your abdomen and is 1.5 meters in length! The large intestine is involved in digestion, and receives undigested food from the small intestine. The large intestine then absorbs as much water as possible and then expels the waste and any excess fiber.

Lungs

The lungs are located in your chest and are protected by your rib cage. The lungs take in oxygen which goes into the blood through the heart, and expels carbon dioxide as the heart receives unoxygenated blood.



Pancreas

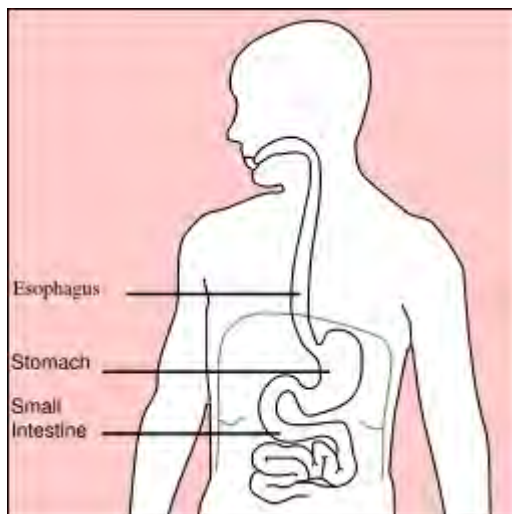
The pancreas is located in the abdomen, behind the stomach. The job of the pancreas is to produce enzymes necessary for digestion and send them to the stomach. The pancreas also regulates blood sugar and does this through its process of creating insulin. The pancreas also creates glucagon which has the opposite effect of insulin and also helps to maintain blood sugar levels.

Small Intenstine

The job of the small intenstine is to digest food. It does this using chemicals, such as emzymes. The small intenstine also absorbs nutrients from the food through villi and gives these nutrients to your blood. The small intenstine is 5 meters long! The food moves from your small intenstine to your large intenstine with a series of muscle contractions.

Stomach

The stomach receives food from the esophagus and sends it into the small intenstine. The stomach's role in digestion is to break down food and mix it with digestive juices or enzymes.



Websites for Practice

There are lots of great websites on the Internet to [help](#) increase your understanding of the body's organs, as well as help you to practice [learning](#) and remembering them. These are my favorites:

[BBC Science Interactive Body](#): This game is like a giant jigsaw puzzle of the organs in the human body. It has a list of organs in the human body which you click on and drag it to the right place in the body, rotating if necessary. There are also a number of interesting facts for each organ.

Appendix B: Lesson 2 Attachments

“What is asthma?”

Asthma is a condition that causes the airways of your lungs to become **inflamed** and **obstructed** making it hard to breathe. The airways also flood with thick mucus. Asthma can make you **wheeze**, cough, and have difficulty breathing. When this happens, it is called an asthma **episode** or **attack**. If not properly treated, it can be fatal. Each year, approximately 500,000 Americans are hospitalized because of asthma, and 5,000 Americans die from the disease.

How do people get asthma? You cannot catch asthma from someone like a cold. It is not **contagious**. Asthma is usually caused by a combination of genetics and environment. You may have asthma because it was passed to you through your genes. You cannot inherit asthma itself, but you can inherit a **tendency** to develop asthma. Then, if you come in contact with certain things in the environment, you may develop asthma. Sometimes an **allergy** may cause an asthma episode. Allergies to pollen, furry or feathered pets, dust mites, mold or foods like peanuts may cause an asthma episode. Another way the environment may contribute to your asthma is by irritating your **respiratory** system. These **irritants** may cause you to get asthma, or if you already have asthma, they may cause an asthma episode to occur. These irritants include dust, car exhaust, strong perfumes, household chemicals, tobacco smoke, and cold air.

There are two types of medications that people with asthma may use to control their asthma. Many people take daily long-term control medications that help prevent an asthma episode from occurring. This type of medication is taken daily and helps keep airways from becoming swollen or tight. When an asthma episode is occurring, many people use quick-acting or rescue medicine to stop the episode from becoming worse. The quick-acting medicine relaxes the muscles in the lungs to help the person breathe easier. Asthma medications may be taken as pills, or through the use of inhalers, **spacers** or **nebulizers** (tools used to deliver the medicine deep into the lungs). You or someone you know may use an inhaler. If an asthma episode is severe and does not get better after taking rescue medicine, a trip to the emergency room for more powerful drugs might be necessary.

Some people get the symptoms of asthma when they are very young, less than a year old, and others do not have the signs and symptoms of asthma for many years. There is no cure for asthma, but it is treatable. With proper education and medication, people can control their asthma and live active, healthy lives.

Asthma Video Vocabulary List:

Allergens

Alveoli

Anti-inflammatory

Asthma attack

Blood vessels

Bronchi

Bronchioles

Bronchospasm

Bronco dilator

Capillaries

Carbon Dioxide

Constriction

Disease

Dust mite

Inflamed

Inflammation

Initially

Irritants

Mold

Mucus

Obstruction

Overreact

Oxygen

Pet dander

Pollen

Pollution

Respiratory Infections

Secretion

Substances

Susceptible

Symptoms

Trachea

Triggers

Wheezing

Windpipe



Activity: Build Your Own Lung

Supplies per group:

- 2 liter pop bottle
- Scissors
- 2 straws
- 2 balloons
- 3 rubber bands
- clay
- piece of clear wrap paper
- binder clip

Directions:

1. Carefully, cut the bottom off the 2 liter bottle, and then set the bottle aside. The bottle represents your chest).
2. Turn the straw upside down so the bend is facing down, and attach a balloon to the bottom of the straw using the rubber band.
3. Repeat step two but with the second straw and second balloon. The straws and balloons represent your trachea and lungs.
4. Place the two straws together, the balloons turned to the outside. Position the straws so the end that is not attached the balloon is roughly $\frac{1}{2}$ above the rim of the bottle.
5. Place clay around the top of the bottle and surrounding the sides of the straws to hold them in place. No air should be able to get into the bottle from the top EXCEPT through the two straws. No clay should cover the tops of the straws.
6. Take the piece of clear wrap and place it carefully over the bottom of the bottle. Secure it in place using a rubber band. The plastic wrap represents your diaphragm.
7. Pull a bit of the clear wrap and attach the binder clip.
8. Pull on the binder clip to inflate the balloons.



Appendix C: Lesson 3 Attachments

Asthma Survey

Circle the answer that best describes you.

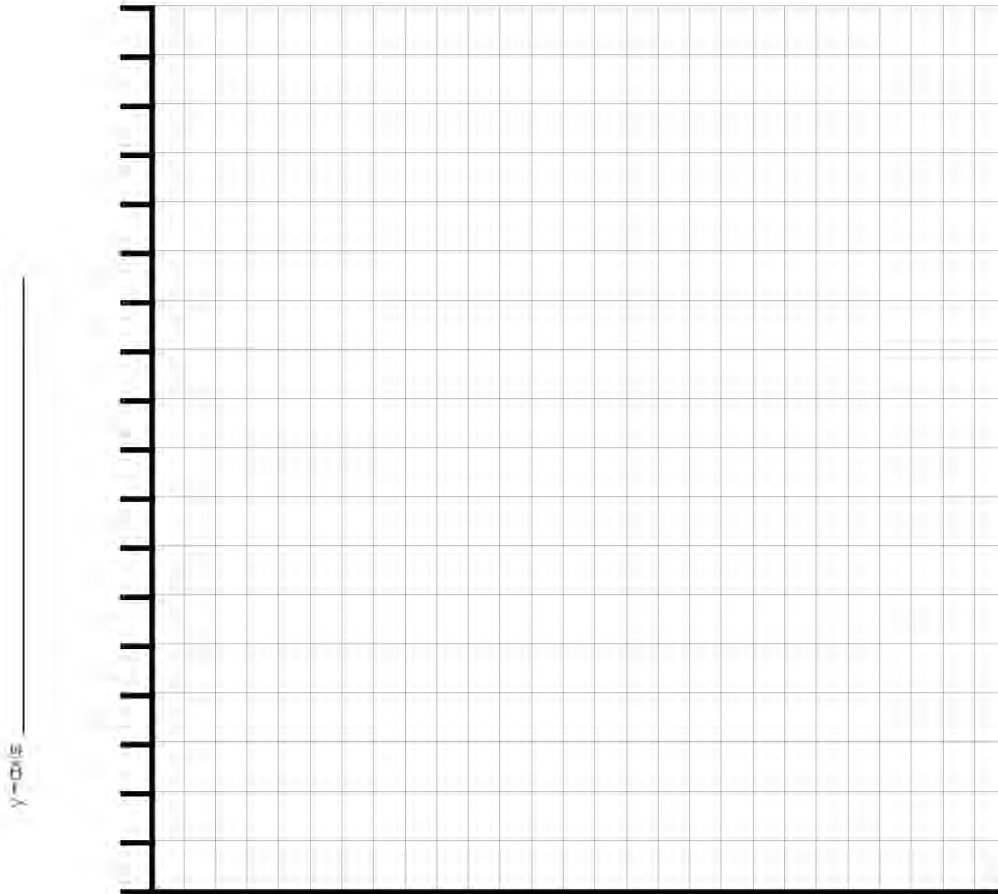
Name (optional)_____

1. Do you have asthma? Yes No

2. Does anyone in your family have asthma? Yes No

Name: _____

Title: _____



x-axis: _____

Additional Resources

Descriptions of Data-related Jobs Mentioned in Lesson 3:

Data Collector

http://www.ehow.com/about_6864858_data-collection-job-description.html

Data Transcriber

http://www.ehow.com/about_6361926_data-transcriber-job-description.html

