

Expert Pack: The Human Body, Circulatory System, Heart

Submitted by: Clark County School District

Grades: 4-5

Date: March 2015

Topic/Subject

The importance of a healthy heart.

Texts/Resources

Book(s)

1. *Magic School Bus: Inside the Human Body*
2. *The Circulatory System*
3. *The Heart: Our Circulatory System*

Article(s)

4. "Broken Hearts"
5. "Life's Simple Seven"

Infographic(s)

6. Habits of the Heart

Other Media

7. Circulatory System: Rap Song about the Circulatory system
8. The Heart Video

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 graduated 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 text, The Magic School Bus: Inside the Human Body, students are introduced to the circulatory system and its function within the human body. The next resource, "Heart and Circulatory System," is a video giving an overview of the circulatory system and the hearts role within the system. The next three resources (one video and two books), expose students to the function and malfunction of the heart within the circulatory system. Next, students read an article, "Broken Hearts," which discusses heart problems that can occur in adolescents. The subsequent website allows students to investigate the inner workings of the heart. The expert pack culminates with a website from the American Heart Association, detailing how kids can keep their hearts healthy.

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**

Content Standard(s):

Nevada Health Standards: H.4.1.2, H.4.1.5, H.4.2.1, H.5.1.2, H.5.1.5, H.5.2.1

Annotated Bibliography
and suggested sequence for reading

AD 520L *The Magic School Bus: Inside the Human Body* (book and video available)

Author: Joanna Cole & Bruce Degen

Genre: informational text

Length: 2156 words

Synopsis: This text provides an overview of the human body leading students to see how the circulatory system works with the other systems and specifically how the heart functions within the circulatory system.

Citation: Cole, J. & Degen, B. (1989). *The magic school bus: Inside the human body*. New York, NY: Scholastic.

Cost/Access: \$5.71 (paperback) \$15.95 (library bound)

Recommended Student Activities: Picture of Knowledge

N/A “Heart: How the Body Works”

Author: unknown

Genre: Informational video (infographic)

Length: 6:14

Synopsis: This infographic video provides a basic overview of the circulatory system of heart and lungs.

Citation: Heart: How the Body Works [Video file]. (n.d.). Retrieved January 8, 2015, from

http://kidshealth.org/kid/closet/movies/CSmovie.html?tracking=85031_A

Cost/Access: \$0.00

Recommended Student Activities: Wonderings

N/A “Circulatory System: Rap Song about the Circulatory System”

Author: unknown

Genre: Informational rap song

Length: 2:00

Synopsis: Explains how the circulatory system functions through song and infographics.

Citation: Circulatory System [video file]. (n.d.). Retrieved January 8, 2015, from
www.teachertube.com/video/circulatory-system-196915

Cost/Access: \$0.00

Recommended Student Activities: Quiz Maker

N/A Habits of the Heart

Author: Unknown

Genre: Infographic website with animations, videos, and lessons

Length: N/A

Synopsis: This infographic provides animations of the heart and how it pumps blood. There are three video regarding the heart. This site also includes 6 lessons that can be completed as a follow-up activity.

Citation: Habits of the Heart. (n.d.), Retrieved February 26, 2015 from,
www.smm.org/heart/heart/top.html

Cost/Access: \$0.00

Recommended Student Activities: Wonderings

760L *The Circulatory System*

Author: Darlene Stille

Genre: Informational text

Length: 1233

Synopsis: Text explains how the circulatory system works within the human body and the functions of all its parts. It builds the students’ knowledge about the parts of the heart and how it pumps blood.

Citation: Still, D., (1997). *The circulatory system*. New York, NY: Children’s Press.

Cost/Access: \$2.50

Recommended Student Activities: Wonderings

1030L *The Heart: Our Circulatory System*

Author: Seymour Simon

Genre: Information text

Length: 2611

Synopsis: Through detailed and vibrant photos readers will develop an understanding of the heart and how it functions within the circulatory system.

Citation: Simon, S., (1996). *The heart: Our circulatory system*. New York, NY. HarperCollins.

Cost/Access: \$14.37

Recommended Student Activities: Quiz maker

990L *Broken Hearts*

Author: Darcy Lewis

Genre: Informational; clearly defined section headings with narrative introduction

Length: 5 pgs.

Synopsis: Informational passage highlighting cardiac arrest amongst adolescents and how to prevent it. Teachers can sign up for access to Readworks.org for free.

Citation: Lewis, D. (2009). *Broken Hearts*. Retrieved January 8, 2015 from,

www.readworks.org/passages/broken-hearts

Cost/Access: \$0.00

Recommended Student Activities: Quiz Maker

N/A *Life's Simple 7 for Kids*

Author: unknown

Genre: Informational text; question headings leading to information about how to keep the heart healthy

Length: N/A

Synopsis: This series describes things to do on your own to maintain a healthy heart and when it is time to seek out a health professional.

Citation: *Life's Simple 7 for Kids*. (2014, August 26). Retrieved January 8, 2015 from,

http://www.heart.org/HEARTORG/GettingHealthy/HealthierKids/LifesSimple7forKids/Lifes-Simple-7-for-Kids_UCM_466610_SubHomePage.jsp

Cost/Access: \$0.00

Recommended Student Activities: Students will set 5 healthy-heart goals.

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.

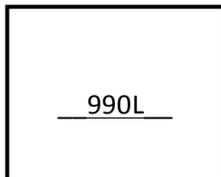
- Provide a brief **student-friendly glossary** of some of the academic vocabulary (tier 2) and domain vocabulary (tier 3) essential to understanding the text
- Download the Wordsmyth widget to classroom computers/tablets for students to access student-friendly definitions for unknown words. <http://www.wordsmyth.net/?mode=widget>
- 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

“Broken Hearts”, by Darcy Lewis

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
6-8 band	925 - 1185L
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.

<p>The purpose of this article is to bring awareness that cardiac arrest can not only affect adults, but also teens. The article also outlines what happens to your heart during cardiac arrest.</p> <p style="text-align: right;">Meaning/Purpose</p>	<p>The structure of this article is supportive in that it begins with a narrative introduction about a teen’s experience with cardiac arrest. The article clearly describes what happens during cardiac arrest, how teens can be affected, and screenings to keep your heart healthy.</p> <p style="text-align: right;">Structure</p>
<p style="text-align: right;">Language</p> <p>Although the text is fairly short, some of the sentences are long and complex, containing dependent clauses and transition words. The vocabulary is somewhat complex (cardiac, defibrillator, cardiomyopathy, electrocardiogram) and may be unfamiliar to students.</p>	<p style="text-align: right;">Knowledge Demands</p> <p>The subject matter should be familiar to students as it is the seventh selection in the expert pack. Cardiac arrest and functions of the heart are known if the texts have been read in the suggested order.</p>

3. Reader and Task Considerations

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

- Rereading, chunking, and discussion could support students with sentence length and vocabulary demands. Many of the words can be supported with discussion of the context and use of the glossary.
- Finding and unpacking “juicy sentences” could provide grammar lessons for the class.
- Encouraging students to make connections to the other texts and resources in the set could support and deepen understanding.

*For more information on the qualitative dimensions of text complexity, visit http://www.achievethecore.org/content/upload/Companion_to_Qualitative_Scale_Features_Explained.pdf

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Learning Worth Remembering

Cumulative Activities – 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

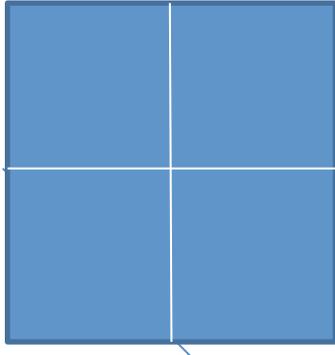
Title	Write, Draw, or List	
	New and important learning about the topic	How does this resource add to what I learned already?
1. <i>The Magic School Bus: Inside the Human Body</i>	An introduction to the systems of the human body and how they work together. PP. 20-21 focus on the heart, specifically that the heart has four chambers and that the heart pumps used blood into the lungs.	
2. "Heart: How the Body Works"	Arteries and veins are called blood vessels.	The veins carry the blood to the chambers of the heart and arteries carry blood away from the chambers of the heart.
3. "Circulatory System: Rap Song about the Circulatory System"	The aorta is the largest artery next to the heart.	Capillaries send blood to the lungs to gather oxygen and then send blood back to the heart.
4. "Habits of the Heart"	The heart circulates the body's blood supply about 1000 times each day.	The animation demonstrates how the blood flows in and out of the heart.
5. <i>The Circulatory System</i>	The functions of the circulatory system within the human body and how to keep it healthy.	When the arteries become blocked by fatty deposits, it causes the blood flow to the heart to stop, which causes a heart attack.
6. <i>The Heart: Our Circulatory System</i>	The heart pushes 3 million quarts of blood a year through 60,000 miles of blood vessels.	Today doctors are able to fix clogged arteries with procedures such as angioplasty and coronary bypass.
7. "Broken Hearts"	During cardiac arrest, your heart stops and you lose consciousness, and your pulse rate and blood pressure drop.	Teens can die from cardiac arrest.
8. "Life's Simple Seven"	Diet and activity can help keep your heart healthy.	This website helped me to learn how to keep my heart healthy.

Learning Worth Remembering

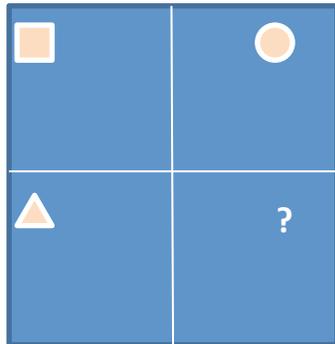
Singular Activities – the following activities can be assigned for each resource in the set. The purpose of these activities is to check for understanding, capture knowledge gained, and provide variety of ways for students to interact with each individual resource. Students may complete some or none 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 *The Magic School Bus: Inside the Human Body*)

- 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 in the corner of each quadrant.



1. Square
2. Triangle
3. Circle
4. Question 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.

2. Quiz Maker (Recommended for “Circulatory System: Rap Song about the Circulatory System”, *The Heart: Our Circulatory System*, “Broken Hearts”)

- 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 the where you can find the answer in the resource.

Question	Answer
1.	
2.	
3.	

3. Wonderings (Recommended for *The Circulatory System*, “Heart: How the Body Works”, and “Habits of the Heart”)

On the left, track things you don’t understand from the article as you read.

On the right side, list some things you still wonder (or wonder now) about this *topic*.

I’m a little confused about:	This made me wonder:

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Expert Pack Glossary

The Magic School Bus: Inside the Human Body

<i>Word</i>	<i>Student-Friendly Definition</i>
Carbon Dioxide	The gas our cells give off as a waste product. When we breathe out we give off carbon dioxide.
Cell	The basic building block of all living things. Your body is made of many cells.
Chamber	Right Chamber: A pump that takes in used blood from the body and takes to the lungs. There are two right chambers in the heart. Left Chamber: A pump that sends fresh blood out to the body. There are two left chambers in the heart.
Circulate	To move continuously through a closed area. Blood circulates through the heart.
Vessel	Vessels are the tubes which move blood through the body.

The Circulatory System

<i>Word</i>	<i>Student-Friendly Definition</i>
Abdomen	Your abdomen is your stomach.
Aorta	The largest artery in the body which carries blood away from the heart.
Artery	Blood vessels that carry blood away from the heart to every part of the body.
Capillaries	The tiniest blood vessels in the body.
Coronary	Relates to the arteries around the heart.
Oxygen	Our bodies' cells use it to make energy.
Valve	A part of the heart that allows blood to flow properly in one direction.
Veins	Blood vessels which carry blood back to the heart from every part of the body.

The Heart: Our Circulatory System

<i>Word</i>	<i>Student-Friendly Definition</i>
Angioplasty	Surgical repair of a coronary artery.
Arterioles	A small branch of an artery which leads to the capillary.
Atrium (Atria)	The two upper chamber of the heart.
Cholesterol	Leaves deposits called plaque in arteries, which leaves less room for the blood to flow through.
Ventricles	The two lower chambers of the heart. They are heavier and stronger than the atria.

“Broken Hearts”

<i>Word</i>	<i>Student-Friendly Definition</i>
Cardiac Arrest	Sudden stop of blood flow; heart attack.
Cardiologist	Doctors who work with hearts and blood vessels.
Contract	When the heart beats, it contracts, or squeezes itself.
Consciousness	The state of being awake and aware of one’s surroundings.
Defibrillator	An electronic device which gives an electric shock to the heart to resume contractions.