

ESCI 310 MINI UNIT OVERVIEW

Group Members: Christine, Francesca, Kathleen, Mikaela, Monah

Grade Level: 5

Subject: Science

Unit: Human Body System

Length: 5-7 hours

OUTCOMES AND INDICATORS

HB5.1 Analyze personal and societal requirements for, and the impact of, maintaining a healthy human body.

- a. Examine methods and perspectives of various cultures, including First Nations and Métis, which have contributed to knowledge about maintaining a healthy body (e.g., balance inherent in the Medicine Wheel).
- b. Identify local knowledge, including the effects of traditional lifestyles, that contributes to human understanding of maintaining a healthy body.
- h. Compare personal diets and those of people who live in different communities and countries worldwide to Canada's Food Guide and Canada's Food Guide First Nations, Métis, and Inuit.
- i. Assess the benefits of lifestyle choices (e.g., daily physical activity, proper nutrition, adequate sleep, appropriate hygiene practices, regular medical check-ups, and using safety equipment) that contribute to maintaining a healthy body.

HB5.2 Investigate the structure, function, and major organs of one or more human body systems such as the digestive, excretory, respiratory, circulatory, nervous, muscular, and skeletal systems.

- a. Explain at least two functions of the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal systems.
- c. Model the structure and/or function of one or more organs from the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal system
- f. Suggest the processes that scientists might follow to investigate questions related to the structure and/or function of human body systems (e.g., Which factors affect breathing and heartbeat rate? How does the digestion process work? How much air do lungs hold? Why is blood red? Where does my food go?).
- g. Rephrase, into a testable form, questions about the structure and/ or function of one or more body systems.

Note: There are various cross curricular opportunities shown throughout this unit plan.

ESSENTIAL QUESTIONS

How does the heart function and what does it do to help our bodies?

What are the different ways we can learn about the heart?

What constitutes a healthy lifestyle and how do various cultures define a healthy lifestyle?

What can I do to keep my heart healthy?

How does the medicine wheel help us understand health and how is it the same and/or different from the westernized views of health?

KNOW, UNDERSTAND, DO (KUDs)		
Know	Understand	Do
The function of the circulatory system The various ways we can learn about the heart Ways to take care of our heart/ body overall Views around the medicine wheel Views on a healthy lifestyle in various cultures How to take their own pulse and analyze heart rate data The structure and function of one additional organ or body system through an inquiry project	How to come up with a question about their health and research an answer How their physical activity and eating habits affect their health How to use their knowledge to care for their hearts and bodies	Come up with a question about an organ of one of the body systems, research the answer and create a model Draw the circulatory system and indicate how blood moves around the body and through the heart

OVERVIEW OF LESSON PLANS
<p>Lesson 1: What is the circulatory system?</p> <p>Objectives: In this lesson, students will be briefly introduced to body systems and then guided into learning about how the circulatory system works. In groups, they will play the Circulatory System Game which entails reading queues to draw how the blood flows through veins, arteries, the heart and the lungs on a picture of a human body. Through this activity they will learn and practice the vocabulary for the circulatory system and begin to understand how it works through the creation of a visual representation.</p> <p>Assessment: Formative assessment will be used to gauge how much background knowledge students have of the circulatory system and how well they are grasping the major parts and function of the system. While students are playing the circulation game in their groups, observation will be used to see how well they are able to visually represent the circulatory system and I will provide extra support to groups when necessary. I will also collect the Circulatory System Picture used during the game and the questionnaire to see how the students did. The 3-2-1 activity in the closure will also give me an idea of what the students took away from the lesson and what questions they might still have.</p>
<p>Lesson 2: How does the heart work?</p> <p>Objectives: In this lesson, the students will specifically be focusing on the structure and functions of the heart. To introduce the activity, we will show the students a video that explores different parts of the heart and their functions. As the students watch the video, they will work on a worksheet that asks them to label a diagram of a heart and match the names of the parts of the heart to the corresponding function. Using this worksheet as a guide, the students will work in partners to create a labelled model of a heart out of playdough.</p>

Assessment: Before the students start creating their modelled hearts, their worksheets will be formatively assessed to ensure that their final models are accurately created and labelled. Formative assessment will also be used through observations as the students work on their heart models. At the end, their labelled heart models will be collected for formative assessment and they will be asked to write about something they learned from this lesson in their science journals.

Lesson 3: Healthy Lifestyle Choices – How does diet impact the heart?

Objectives: In this lesson, the students will be learning how diet and food choices impact the functions of the heart. Students will begin by creating a list of healthy and unhealthy foods together as a class. Afterwards, the teacher will go through a PowerPoint which explains how sugar, salt, and fat can impact the heart including a video. Afterwards, students will be creating unhealthy arteries that would connect to the heart.

Assessment: Students will draw a healthy artery in their science journals, and draw using labels the unhealthy heart that they created. Students will then answer questions that are recorded in the same journal entry.

Question: “How can you keep your hearth healthy? What type of foods are you going to eat, and what type of foods are you going to limit to have good heart health?”

Science journal entry have students draw a diagram of what they created and answer what did you learn about the impact of diet on the heart

Lesson 4: Healthy Lifestyle Choices – How does exercise impact the heart?

Objectives: In this lesson students will learn how to take their pulse, and they will collect, record and analyze their heart rate data and make conclusions about the effect of physical activity on the heart.

Assessment: Formative assessment will take place through observation of student responses to class discussion questions. Students will also record the findings of their heart rate experiments in their science journals, which will be passed in for formative assessment.

Lesson 5: How do various cultures know and understand how to maintain a healthy body?

Objectives: In this lesson, students will be exploring the Indigenous Ways of Knowing of using the medicine wheel to understand the body as well as review how nutrition and physical activity play a role in our health. In addition, students will be able to understand that various cultures follow different routines from the typical western society by filling out a journal entry and sharing their understandings with the class. To understand how the medicine wheel works, we will invite an Elder to come share their knowledge. We invite students to think about their learnings of the medicine wheel and we will create a wheel for our classroom to reflect back on our learnings. To expand on their cultural knowledge, students will fill out a journal entry with their families that asks: “What is something interesting that you and your family do to maintain a healthy lifestyle (ex: diet, spiritual routines, exercise routines, etc)?”. The question allows for students and their families to reflect about the traditions they follow which we would then discuss together in class for a next lesson.

Assessment: Formative assessment will take place through observation of student participation in class discussion. In addition, they will also be able to share their understandings through their journal entry.

Lessons 6-7: Inquiry Project (Research About Human Body System)

Objectives: In this inquiry project, students will be able to pick a different organ and do research about that organ. Students will generate questions about an organ that they are curious about. They will then spend some class time doing research and collecting data for their question. Afterwards, they will create a 3D model of the organ of their choice and present it to the front of the class. They will show their art work and explain what they found out about their choice.

Assessment: Summative assessment – 3D model

LESSON PLANS

Lesson 1 – What is the circulatory system?

Outcome(s) & Indicator(s):

HB5.2 Investigate the structure, function, and major organs of one or more human body systems such as the digestive, excretory, respiratory, circulatory, nervous, muscular, and skeletal systems.

a. Explain at least two functions of the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal systems.

I can draw how blood moves in the circulatory system and explain its main functions.

CR5.4 Read and demonstrate comprehension of a range of contemporary and classical grade-appropriate fiction, script, poetry, and non-fiction (including magazines, reports, instructions, and procedures) from various cultures including First Nations, Métis, and Inuit and countries (including Canada).

a. Determine the essential purpose, key ideas, arguments, and perspectives of texts including First Nations and Métis texts.

I can understand the main ideas of a poem.

Instructional Strategies:

- Interactive/Simulation: Students will work in groups to play the Circulation game and will guide each other through the activity.
- Reading for Meaning: in their groups, students will read the directions and definitions from the glossary for meaning

Classroom Management:

- 3-2-1: at the end of the lesson, students will hand in a sheet indicating 3 things they learned, 2 things they found interesting and 1 thing they will wonder. This will be their exit slip and it will give serve as formative assessment for the instructor to see where the students' knowledge is at regarding the circulatory system.
- Thumbs up, thumbs down: students will indicate their understanding during the reading of the poem

Adaptations:

- The poem will be projected on the white board for visual learners or for student with auditory impairments
- Students with a lower reading level will be assigned the role of Game Official during the circulatory game so that they are still able to fully participate

Introduction

Time: 7-8 minutes

Materials:

- Book “The Blood Hungry Spleen and Other Poems About Our Parts” by Allan Wolf, Illustrated by Greg Clarke
- Projection of the poem on the white board so students can follow along (Powerpoint)

Tell the students we will be spending the next few weeks learning about human body systems. As a large group, ask the students what body systems they can think of. (Possible answers: human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal systems.)

Highlight for students that these systems work together to keep our bodies healthy. Let them know that we will be focusing on the circulatory system in the coming weeks.

Next, a poem about the circulatory system will be read to the students (See images below). Share with them that the poem talks about “red silent rivers” and “blue silent rivers.” Ask the students to try to figure out (without saying it out loud) what part of the circulatory system those phrases represent while the poem is being read. (Answer: arteries and veins)

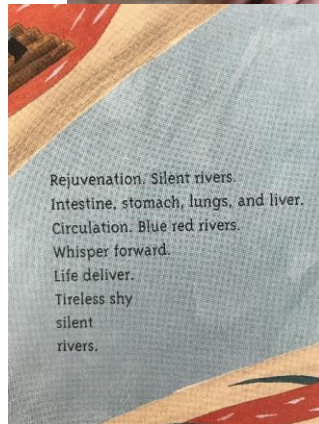


Shy Silent Rivers

They start at the heart.
The heart's where they end.
Shy silent rivers flow under your skin.

Arteries rush the blood away
to hungry cells in every part.
Every part. Distant limbs.
Tributaries. Tiny slivers.
Oxygen, food, and life to deliver.
Shy red silent rivers.

Veins return the blood on home.
Weary blood cells. Used and blue.
Replenished in your heart lung nest.
Never rest. Never rest.
Ever turning. Tireless givers.
Shy blue silent rivers.



Rejuvenation. Silent rivers.
Intestine, stomach, lungs, and liver.
Circulation. Blue red rivers.
Whisper forward.
Life deliver.
Tireless shy
silent
rivers.

Read the poem to the students and have the words projected so they can follow along. Then, ask the students to give a thumbs up if they think they know what those phrases represent and a thumbs down if they don't know yet. Then, ask for volunteers to share what they think.

<p>Development</p> <p>Time: 30 minutes</p> <p>Materials:</p> <p>One for each group of 3 students:</p> <ul style="list-style-type: none"> ➤ Here Are the Rules sheet (Appendix A) ➤ Circulation Game Picture sheet (Appendix B) ➤ Circulatory System Glossary sheet (Appendix C) ➤ Blue pencil crayon ➤ Red pencil crayon ➤ Regular pencil ➤ Tape 	<p>Students will be playing the Circulation Game in groups of 3. Make groups and assign roles ahead of time.</p> <p>Roles in each group:</p> <ol style="list-style-type: none"> 1- Glossary Guru: good reader 2- Coach: competent reader 3- Game official: does not need to be a good reader <p>Tell students this game will be a fun way to learn about how the circulatory system works.</p> <p>Each group will need:</p> <ul style="list-style-type: none"> • Here Are the Rules sheet - Appendix A • Circulation Game Picture sheet – Appendix B • Circulatory System Glossary sheet – Appendix C <p>Help students get set up by going through the first page of the “Here Are the Rules Sheet” together.</p> <p>Ask all Game Officials to tape the Circulation Game Picture sheet down on the desk in front of them, ensuring all team members can see.</p> <p>Make sure all Coaches are holding the Here Are the Rules sheet and are ready to read the instructions to their group, slowly and clearly. Tell students they might need to read some steps more than once if their group needs clarification.</p> <p>Ask all Glossary Gurus to hold the Circulation System Glossary and be ready to read definitions when asked.</p> <p>In their groups, students will follow the instructions on the rules sheet and will draw veins (blue) and arteries (red) on a picture of a human body. They will then answer questions about the circulatory system, based on the activity and drawing from the glossary. Their pictures and answers to the questions will be collected for formative assessment.</p> <p>Activity adapted from the Heart and Stroke Foundation of Canada</p>
<p>Closure</p> <p>Time: 5 minutes</p> <p>Materials: Paper and pencils</p>	<p>Ask students to complete a 3-2-1 as an exit slip (3 things they learned, 2 things they liked or 2 interesting facts from the lesson, 1 question they still have about the lesson).</p>

Lesson 2: How does the heart work?

Outcome(s) & Indicator(s):

HB5.2 Investigate the structure, function, and major organs of one or more human body systems such as the digestive, excretory, respiratory, circulatory, nervous, muscular, and skeletal systems.

c. Model the structure and/or function of one or more organs from the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal system

I can identify and represent the parts of the heart and their functions.

CP 5.8 Create art works using a variety of visual art concepts (e.g., positive space), forms (e.g., graphic design, photography), and media (e.g., mixed media, paint).

f. Demonstrate ability to represent visual details to enhance depictions of plants, animals, people, and objects.

I can visually represent the parts of the heart.

Instructional Strategies:

- Direct Instruction: Video and handouts
- Interactive Instruction: Group work and discussion
- Experiential: Model building
- Exit slip/journal, observations, and discussion for assessment and to ensure comprehension

Adaptations:

- Turn on subtitles and reduce the speed of video
- Ask students to cut out labels for the heart diagram worksheet rather than rewriting the words

<p>Introduction Time: 15 minutes Materials: ➤ How Your Heart Works video ➤ Heart diagram worksheet – Appendix D ➤ Pencils</p>	<p>Activate prior knowledge by asking the students what they remember about the circulatory system. Steer the focus of the discussion towards the heart and give each student a copy of the heart diagram worksheet. Complete the worksheet (Appendix D) while watching the <i>How Your Heart Works?</i> video. After the video, go through the worksheet together to ensure the students have the correct answers.</p> <p><i>“Last class we learned about the ‘miracle liquid’ inside our bodies – Remember what it was?... Yes, it was blood and who can tell me how our blood circulates around our bodies?... Right, the circulatory system. There’s one organ in our body that is in charge of this system and it is the heart. Today, we’ll be doing a fun activity that explores the different parts of the heart. In order to do this fun activity, we’ll need to know the different parts of the heart and what they do. So first we’ll watch a video that explains the parts of the heart and what they do. While we watch the video, we’ll do this worksheet. The information is important for the activity we’ll be doing afterwards.”</i></p>
<p>Development Time: 30 minutes Materials: ➤ Playdough</p>	<p>Now that the students have a guide to work from, they will be creating their own 3D heart models out of playdough and straws. After completing their models, the students will then label each part using their worksheet as a guide.</p>

- Straws
- Toothpicks
- Tape
- Paper for labels
- Writing utensil

“Now that we have gone through the different parts of the heart and have learned their functions, you will be working with a person next to you to create a 3D model of a heart out of playdough and straws. After creating your model, you will be labelling each part using the toothpicks, tape, and pieces of paper. You may use your worksheets as guides.”



Photo From: <https://www.pinterest.ca/pin/138767232243454805/>

Recipe for Playdough: <https://www.iheartnaptime.net/play-dough-recipe/>

- Closure**
 Time: 10 minutes
 Materials:
- Science journals

Clean up. Ask students to place their completed hearts on a shelf/countertop.

“Great work today, you did a fantastic job on your hearts! In the next couple of classes, we will be learning about how our choices affect our hearts – such as exercising and eating habits. In your science journals, I would like you to write down one thing you learned about the heart and one question, wonder, or idea you have about how our lifestyle choices affect our hearts – we will be discussing these in the next couple weeks.”

Commented [MD1]: Follow Up (Preview): Clean up.

Lesson 3: Healthy Lifestyle Choices – How does diet impact the heart?

Outcome(s) & Indicator(s):
HB5.1 Analyze personal and societal requirements for, and the impact of, maintaining a healthy human body.
 (f) Relate the effects of common diseases to the organs or body systems they affect or are related to (e.g., heart attacks affect the circulatory system, epilepsy affects the nervous system, hepatitis affects the liver, gallstones affect the gall bladder, and asthma affects the respiratory system).

(i) Assess the benefits of lifestyle choices (e.g., daily physical activity, **proper nutrition**, adequate sleep, appropriate hygiene practices, regular medical check-ups, and using safety equipment) that contribute to maintaining a healthy body.

I can explain ways to take care of my heart.

USC5.1 Analyze personal eating practices.

(d), Investigate a variety of information about healthy eating practices (e.g., five small meals/day, cultural foods and traditions, vegetarianism).

(e), Evaluate how particular practices and diets (e.g., cultural diets, vegetarian diet, diabetes diet) require planning to ensure a healthy, balanced diet.

I can explain why proper nutrition is important for my health.

Instructional Strategies:

- Brainstorming
- Listening and Viewing
- Explicit Teaching
- Model Building

Adaptations:

- Different materials to build the model
- Readings instead of PowerPoint

Introduction

Time: 10-15 minutes

Materials:

- Whiteboard
- Markers
- Smartboard
- PowerPoint-
https://docs.google.com/presentation/d/1Qr7r_QQeT06vd2eumSbTSyg6TEviRcaeP5MYGnTYTpM/edit?usp=sharing

Begin with a discussion about healthy and unhealthy foods. On one board write “Healthy Foods” and on a separate board beside it write “Unhealthy Foods.” Give students about 30 seconds to think independently and then ask for students to answer what are healthy foods and write these answers on the board. When students start giving answers you may wish to just have them shout out the answer without raising their hands as they want to keep contributing answers to use less time. *If students contribute an answer that is an unhealthy food example while on the healthy board, simply write it on the unhealthy board. Move on to the second board and have students give their answers to what are some unhealthy foods and follow the same steps as the previous board.

Depending on the amount of student answers, you may wish to go back and add answers to the healthy board.

Healthy Food Examples: apples, oranges, carrots, bananas, asparagus, strawberries, blueberries, spinach, avocados, peppers, cucumbers, broccolis, cauliflower, pineapples, tomatoes, grapes, peaches, chickpeas, celery, kiwis

Unhealthy Food Examples: pizza, fries, burgers, sugary cereal, white bread, chips, candies, hotdogs, corn dogs, sodas, bacon, sausage, donuts, pastries, mozza sticks, fried foods

<p>Development Time: 20-25mins Materials:</p> <ul style="list-style-type: none"> • 3 bins (Place the Playdough in one, toilet paper rolls in another, and tissue paper in the final one) • Empty toilet paper roll • Playdough • Glue • Tissue paper • Other recycled paper scraps. • 1 ping pong ball per student • Science journals • PowerPoint- https://docs.google.com/presentation/d/1Qr7r_QQeT06vd2eumSbTSyg6TEviRcaeP5MYGnTYTpM/edit?usp=sharing 	<p>Go through PowerPoint stopping at slide 9.</p> <p>“Now I want you to show me what a healthy artery looks like and what an unhealthy artery looks like using a model.” “These empty toilet paper rolls are going to represent an artery. The ping pong balls can represent the blood that needs to flow through the artery to bring oxygenated blood to the rest of the body.”</p> <p>“First, I want you to draw what the healthy artery looks like in your science journals.”</p> <p>“After you have drawn your healthy artery I want you to create an unhealthy artery or a clogged artery using the materials I give you.” “Once you have constructed the unhealthy artery test to see if the blood is able to go through it. Draw an image of the new, unhealthy artery you have made in your science journal. Be sure to label what you used to make the unhealthy artery please. If you have time you can try and use different materials to make clogged arteries. Don’t forget to draw those too!”</p> <p>“You can choose to create your models individually or in pairs, but everyone needs to have at least two labelled drawings in their journals.”</p> <p>Place the three bins with the materials (Playdough, rolls, tissue paper) on an empty table and tell students they may begin. Students may choose their own partners for the activity.</p> <p>Walk around the classroom observing students building models and engaging in conversations. Check for student understanding of what type of foods</p>
<p>Closure Time: 10 min Materials:</p>	<p>Clean up- Tell students to bring their remaining materials back to the buckets. Students can display their artery models on the table at the back of the classroom.</p>

<ul style="list-style-type: none"> • PowerPoint- https://docs.google.com/presentation/d/1Qr7r_QQeT06vd2eumSbTSyg6TEvjRcaeP5MYGnTYTpM/edit?usp=sharing • Science Journals 	<p>Go to slide 10 on the PowerPoint</p> <p>Have students answer the questions on the slide 10 in their science journals.</p> <p>“Today we got to explore how our diet impacts our heart, and heart health. Next class we are going to see how exercise impacts the heart!”</p>
---	--

Lesson 4: Healthy Lifestyle Choices – How does exercise impact the heart?

Outcome(s) & Indicator(s):

HB5.1 Analyze personal and societal requirements for, and the impact of, maintaining a healthy human body.

*i. Assess the benefits of lifestyle choices (e.g., **daily physical activity**, proper nutrition, adequate sleep, appropriate hygiene practices, regular medical check-ups, and using safety equipment) that contribute to maintaining a healthy body.*

I can understand the impact of exercise on the heart

PE5.2 Apply, with guidance, beneficial and safe strategies to improve flexibility and muscular endurance through participation in a variety of movement activities.

a. Identify the health-related fitness benefit (e.g., whether flexibility or muscular endurance; which muscles are benefiting) while participating in teacher-selected exercises and activities that enhance flexibility or muscular endurance.

I can skip rope

I can understand the benefits of exercise

SP5.2 Construct and interpret double bar graphs to draw conclusions.

b. Create double bar graphs, without the use of technology, based upon data relevant to one's self, family, or community. Pose questions, and support answers to those questions using the graph and other identified significant factors.

I can create a double bar graph

I can interpret the results of an experiment

Instructional Strategies:

- Direct Instruction (Lecture) - Teaching students how to measure their heart rates

- Experiential (Conducting Experience) - Experimenting with exercise and heart rates
- Interactive Instruction – Investigative group/cooperative learning

Adaptations:

- Differentiations will be provided for students with differing mobility capabilities
- Activity will take place in pairs

Introduction

Time: 5 minutes

Materials: Timers

Students will be gathered together and addressed as a class with some review questions:

- “What kind of body part is the human heart?”
- “What can you tell me about how the human heart works?”
- “How do you think physical activity affects the heart?”

Students will then be taught how to take their heart rates by pressing their index and middle fingers of one hand onto their carotid artery and counting beats for 15 seconds, then multiplying by four to get their heart rates. They will be given 2 minutes to practice in pairs, with one student timing and one student taking their pulse.

Development

Time: 30 minutes

Materials:

- Timer
- Recording Sheet
- Graph Paper
- Question/Answer Sheet
- Science Journals

Students will be placed in pairs and will be given worksheets to record their data (students will take turns, one jumping rope and recording their heart rate, the other timing): (See Appendix E)

- 1) Sit down and relax for one minute: Resting Heart Rate: _____/ 15 seconds x 4 = _____beats/minute (heart rate)
- 2) Jump rope for 1 minute at a normal pace: Exercising Heart Rate #1: _____/15 seconds x 4 = _____beats/minute (heart rate)
- 3) Jump Rope as fast as you can for 1 minute: Exercising Heart Rate #2: _____/ 15 seconds x 4 = _____beats/minute (heart rate)
- 4) Jump Rope for 5 minutes at a normal pace: Exercising Heart Rate #3: _____/15 seconds x 4 = _____beats/minute (heart rate)

Students will then be asked to create a double bar graph, with each heart rate recorded for each student in a different colour on the x-axis and the heart rate on the y-axis.

Finally, students will be asked to answer a series of questions on the worksheets, and to record any additional thoughts relating to the activity in their science journals:

	<p>1) Find another pair and compare your graphs – what are some similarities and differences? 2) What is the difference between your heart rate when resting and exercising? 3) As you start to do an activity/exercise, what happens to your heart rate? 4) If you exercise regularly, how does this help your heart? 5) How much exercise do you think you should get in a day and in a week?</p> <p>Activity adapted from the Heart and Stroke Foundation of Canada</p>
<p>Closure Time: 10 minutes Materials: Video</p>	<p>Class discussion will center around the students’ conclusions based on the questions they were asked to answer and any other thoughts or insights relating to the activity they had.</p> <p>The lesson will end with a video about how physical activity affects the heart: https://www.youtube.com/watch?v=O8ttt3M8qZM</p>
<p>Lesson 5: How do various cultures know and understand how to maintain a healthy body?</p>	
<p>Outcome(s) & Indicator(s): HB5.1 Analyze personal and societal requirements for, and the impact of, maintaining a healthy human body. <i>a. Examine methods and perspectives of various cultures, including First Nations and Métis, which have contributed to knowledge about maintaining a healthy body (e.g., balance inherent in the Medicine Wheel).</i> <i>b. Identify local knowledge, including the effects of traditional lifestyles, that contributes to human understanding of maintaining a healthy body.</i></p> <p><i>I can identify two understandings from our guest speaker</i> <i>I can identify what me and my family do to maintain a healthy lifestyle</i> <i>I can understand that various cultures follow various routines to maintain a healthy lifestyle</i></p> <p>IN5.1 Demonstrate an understanding of the Aboriginal heritage of Canada. <i>f. Paraphrase a traditional narrative about the origins of the First Nations or Inuit peoples, about the relationship with the natural environment, and connections between spirituality and the natural environment.</i></p> <p><i>I can understand the role of the medicine wheel in Indigenous culture</i></p>	
<p>Instructional Strategies: Direct instruction: Guest speaker Interactive Instruction: Group work and discussion</p>	

Experiential: Model building	
Adaptation(s): During our guest speaker section, students may benefit from the following... Flexible seating Movement breaks Fidgets	
Introduction Time: 10 minutes Materials: Sticky notes White board	<p><i>“Hello everyone, today we will go over what we learned in our past two lessons on how to maintain a healthy body. Today, we’re going to learn about how different cultures do different things to understand how our bodies work and what we need to do to keep it healthy. First, we will do a “refresher” activity and to remind us of our learnings from the past two classes. Then we have Elder _____ coming in to talk to us about how the medicine wheel can help us understand how our bodies work! When Elder _____ leaves we will do a small reflection of what we learned and discuss some different things that we do in our culture to help us understand how to keep our bodies healthy. Afterwards, we have two activities we will work on which I will explain later. Let’s start with our “refresher” activity”</i></p> <p>Refresher Activity</p> <ul style="list-style-type: none"> • For the refresher activity students will get two sticky notes to write what they do to live a healthy lifestyle using their own knowledge and knowledge they learned from the past 2 lessons. Afterwards, we will read and group the sticky notes into similar and different ideas and discuss our findings.
Development Time: 45 minutes Guest Speaker (Elder) Materials: <ul style="list-style-type: none"> • Black, Yellow, White, and Red poster paper • Sticky notes • Journaling Notebook 	<p>Thank students for sharing the ideas and prepare them for our guest speaker.</p> <p>Part 1- Guest Speaker</p> <p><i>“We all have different ways of tracking how we maintain keeping a healthy body. Something that may be of interest to you is the Indigenous peoples method of using the medicine wheel. Today we have Elder _____ to come in and talk to us about how the medicine wheel works.”</i></p> <ul style="list-style-type: none"> • When our guest is done their teachings will thank them and discuss what we learned about the medicine wheel. <p>Part 2- Medicine Wheel Activity</p> <p><i>“I want us to remember how the medicine wheel can be a useful tool to help us understand our bodies and so we will create one for our classroom!”</i></p> <ul style="list-style-type: none"> • We will then create an in-class medicine wheel to remind us of our learnings. • For each colour of the medicine wheel each student will write down what they believe is important/ what they learned about it. Then we put up the medicine wheel in our class • We will discuss what we wrote and why we think it is important.

Part 3- Take Home Journaling Activity (Exploring Cultures)

“We have so many different cultures in our classroom that I want to learn more about how you and your family! We learned about how Indigenous peoples use the medicine wheel to understand their bodies and I want to know if you and your family use something similar or other things to help you understand how to maintain a healthy body! I invite you all to write down this journal prompt to take home and discuss with your families and bring it back for next week’s science class to share!”

- When we are done with our activity students will write down a journal prompt that they will take home and discuss with their families for next class.
- Prompt: “In class, we learned about how Indigenous peoples use the medicine wheel to understand how the body works and how we can keep it healthy. What is something interesting that you and your family do to maintain a healthy lifestyle (ex: diet, spiritual routines, exercise routines, etc)?”



Adapted from: https://crawfordandclass.files.wordpress.com/2015/10/img_1053.jpg

Closure

Time: 5 minutes

Materials:

“As we learned from our guest speaker today, the medicine wheel helps us understand how to keep our bodies healthy in a different way. Different cultures have different ways of understanding and helping our bodies which you will have the chance to review with your families! We will then come together and share those traditions in our next class!”

- Have students do a quick clean up before we move on.

Lesson 6-8: Inquiry Project

Outcome(s) & Indicator(s):

HB5.2 Investigate the structure, function, and major organs of one or more human body systems such as the digestive, excretory, respiratory, circulatory, nervous, muscular, and skeletal systems.

- a. Explain at least two functions of the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal systems.
- c. Model the structure and/or function of one or more organs from the human digestive, excretory, respiratory, circulatory, nervous, muscular, or skeletal system
- f. Suggest the processes that scientists might follow to investigate questions related to the structure and/or function of human body systems (e.g., Which factors affect breathing and heartbeat rate? How does the digestion process work? How much air do lungs hold? Why is blood red? Where does my food go?).
- g. Rephrase, into a testable form, questions about the structure and/ or function of one or more body systems.

I can show my learning of the body organs through a model.

Instructional Strategies:

- Experiential: Model building
- Interactive: Group work
- Inquiry based learning

Adaptations:

- For students who have difficulty coming up with an inquiry question, the instructor will have some examples ready for the students to choose from.
- Questions:
 - What system does this organ belong to and what is its function?
 - What happens when this organ is not working properly?
 - What other organs does this organ connect to?
 - What happens to our bodies when this system is not working properly?

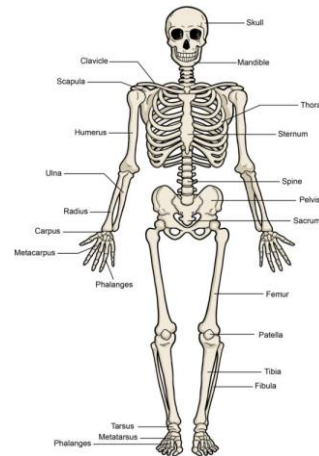
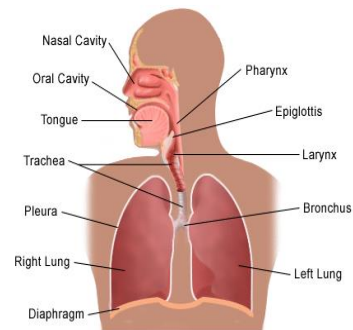
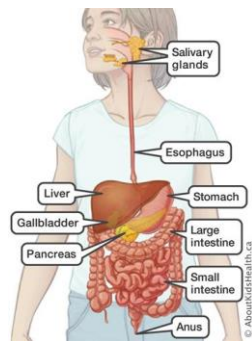
<p>Introduction</p> <p>Time: 5 minutes</p> <p>Materials:</p> <p>White board</p> <p>Sticky notes</p>	<p><i>“We talked a lot about the circulatory system and how it works in our bodies. We have many different systems and organs that play a big role in making sure our body properly functions! Over the next few classes we want you to explore the different systems in our bodies and the organs that help the systems work. To do this, we will be doing and inquiry project.”</i></p> <p>Before explaining the project, we will create a brainstorm wall of the different systems and organs we need to activate background knowledge.</p> <p>Hand out sticky notes</p>
<p>Development</p>	<p>Explanation of Project:</p>

Time: 45 minutes

Materials:

- We will explain to students that they will be conducting an inquiry project on the body system or organ of their choice
- We will review the different systems using a labeled poster of that system, showing the organs it uses
- Students will take a few minutes to review the posters
- Students will choose their organ or body system of focus, think of a question, and come review their choice and question with the teacher
- Once approved, the student will have the rest of the class to use books and the internet for research
- When they have found the answers to their question(s) they will then find a way to represent it visually (drawing, playdough, painting, sculpture using balloons, straws, etc.)
- Students will be given time throughout the week to work on their project until the next lesson where they will share their work

Examples of posters:



For lessons 6 and 7 students will start working on their projects. Throughout the days, students will be given some time to work on their projects and are expected to work on them when they have free time. On the last day for lesson

	8, we will spend 45 minutes listening to our peer's presentations. Students will present their organs and their learnings about their organs!
Closure Time: 5 minutes Materials:	Lesson 6 and 7 "Thank you for working so well on your projects, I am excited for you all to share your projects" Lesson 8 "Great presentations everyone! You all did an amazing job with your organs! I am very impressed. I hope this project helped you learn more about the human body system and all the different types of organs that help our bodies keep going! Please hand in all your things on the back counter."

Appendix A

The Circulation Game

Here Are the Rules

Did you know that you have a miracle liquid inside your body? It's your blood, and it keeps you alive. But it can't do that all by itself. It needs assistance from other body parts. In this game, you will use red and blue ink to find out how busy blood really is.

You will be put into a group of 3 and each of you will be assigned a task:

- 1- Coach
- 2- Game Official
- 3- Glossary Guru

Are you ready?

Each group needs:

1. this "Here Are the Rules" sheet for the Coach
 2. a "Circulation Game Picture" sheet for the Game Official
 3. a "Circulatory System Glossary" sheet for the Glossary Guru
- red pencil crayon
 - blue pencil crayon
 - ordinary pencil

Get Set-Up

- Game Official: tape the “Circulation Game Picture” down in front of you (make sure all group members can see it) and have a red and blue pencil crayon ready
- Coach: hold this “Here Are the Rules” sheet
- Glossary Guru: hold the “Circulatory System Glossary” sheet

The Coach will read the following instructions out loud for the group. The Game Official will use the red and blue pencil crayons first (the Coach and Guru will have a turn after). The Guru will keep an eye on the glossary. As you go through the activity, make sure everyone agrees on what to do.

Instructions

1. Picture B is a simpler version of Picture A.
 - a. Use the Code Box to identify parts on the pictures.
 - b. Guru, use the glossary to read to the group what these parts do.
2. Blood picks up oxygen in your lungs, so start there. Place the red pencil crayon inside the lungs on Picture B. Draw a red line from the lungs to the heart’s top right corner. Without lifting the pen, “pump” the blood:
 - a. Into the heart’s bottom right corner.
 - b. Out of the heart and over to the nearest hand.
 - c. Back to flow beside the stomach by not inside of it.
 - d. Down the nearest leg to the foot.
 - e. Back up and down the other leg.
3. Blood picks up food near the stomach. But the blood has now gone about halfway around the body. So it has given up half of its oxygen and food. It has also picked up waste from the body parts it has visited. To show this, change pencil crayons from red to blue.
4. Without lifting the pencil crayon, push the “blue” blood:
 - a. Up the leg and the empty side of the body.

- b. Out the empty art to the hand.
 - c. Back to the neck, up and around the head.
 - d. Back down to the top left corner of the heart.

5. Don't lift the pencil crayon. Continue the blue line down to the heart's bottom left corner, then "pump" it up to the lungs. The lines will cross. That's okay.

6. The lungs lead to the outside air, so now the blood can pick up fresh oxygen. You're back to the start! So it's time to change pens from blue to red again.

7. The red ink stands for the same blood. It's loaded with fresh oxygen and ready for another trip.
 - a. Guru: it's your turn! Trace a new path through the same body parts. Don't lift the red pencil crayon until the blood has gone about halfway around the body. Then change to a blue pencil crayon. Keep circulating the inky "blood" through the circuit until you get back to the heart's bottom left corner.
 - b. Coach: now it's your turn! Trace a new path through the same body parts.

8. Picture B now has a lot of winding red and blue lines inside of it. Get the Glossary Guru to help find the "official" name for these lines and write them below. Look to see if you can find lines like this on your body.
 - a. Name for red lines:
 - b. Name for blue lines:

9. Picture B stands for your circulatory system.
 - a. What do you think circulatory means?

b. What do you think system means?

c. Get the Guru to take a look at the glossary. Does the glossary agree with you?

10. According to the glossary,

a. What body part pumps your blood around your circulatory system?

b. What body part(s) carry your blood around your circulatory system?

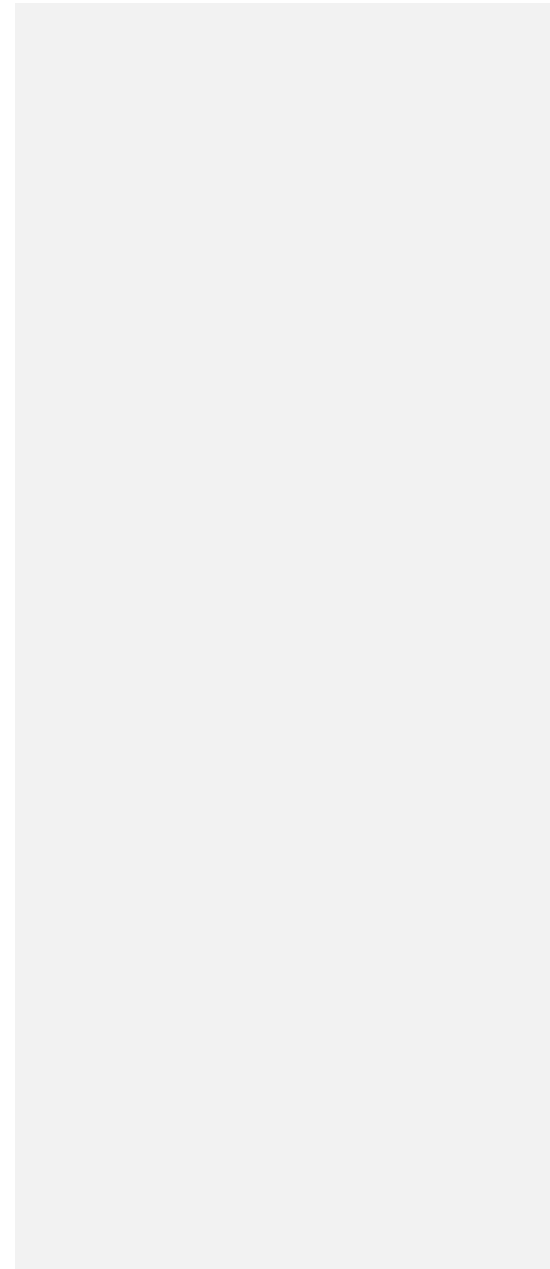
c. Where does the blood pick up food?

d. What does food do for your heart? Your body?

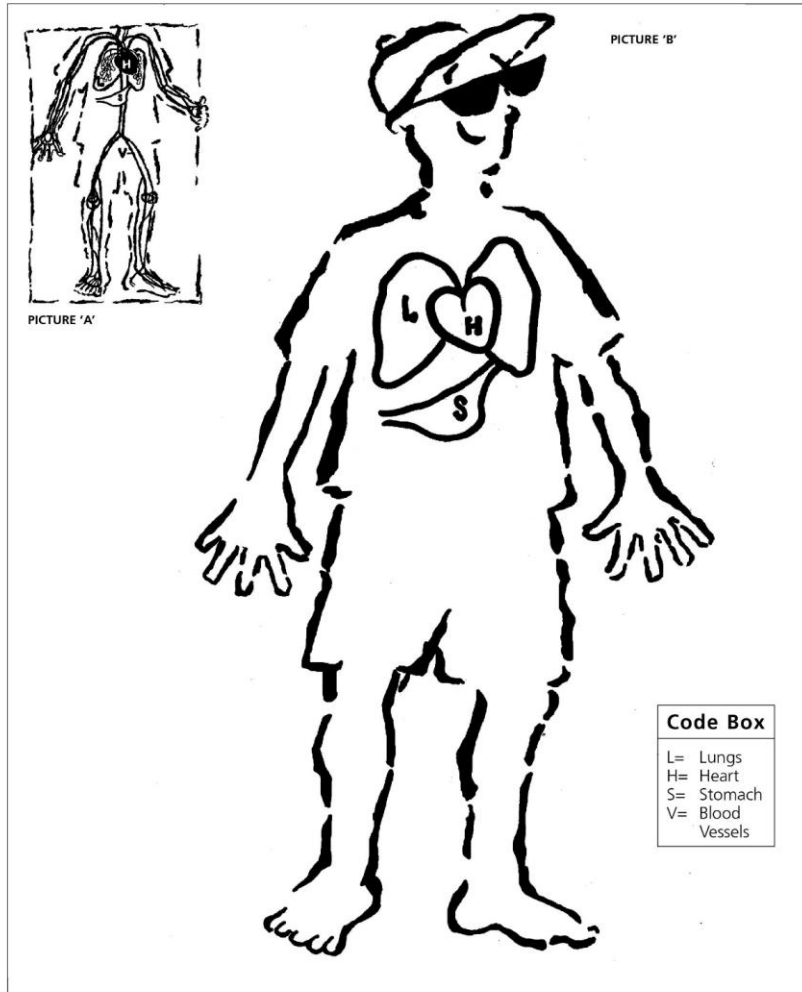
e. Where does the blood pick up oxygen?

f. What does oxygen do for your heart? Your body?

Appendix B



CIRCULATION GAME PICTURE



Appendix C

Circulatory System Glossary

arteries: Tubes that carry blood away from heart.

blood vessels: Tubes that carry blood around body (See arteries, capillaries, veins).

blood: Liquid containing red blood cells.

capillaries: Very narrow veins and arteries.

circulatory system: Includes a heart to pump blood and a network of tubes called blood vessels.

food: edible materials containing carbohydrates, proteins, fats and other useful materials.

fresh blood: Blood fresh from lungs is high in oxygen, low in wastes, and bright red in colour.

heart: Muscular pump with four hollow chambers; upper chambers collect blood coming into heart; lower chambers pump blood forcefully away.

heartbeat: Repeated pumping action of heart; or sound made by that action, or the beats per minute.

lungs: Hollow, thin-walled pushes inside chest; lined with blood vessels what absorb oxygen from air.

oxygen: Material found in air, needed to extract energy from fuel; cells use it to 'burn' blood sugar.

pulse: Rhythm of heartbeat felt in wrist or throat.

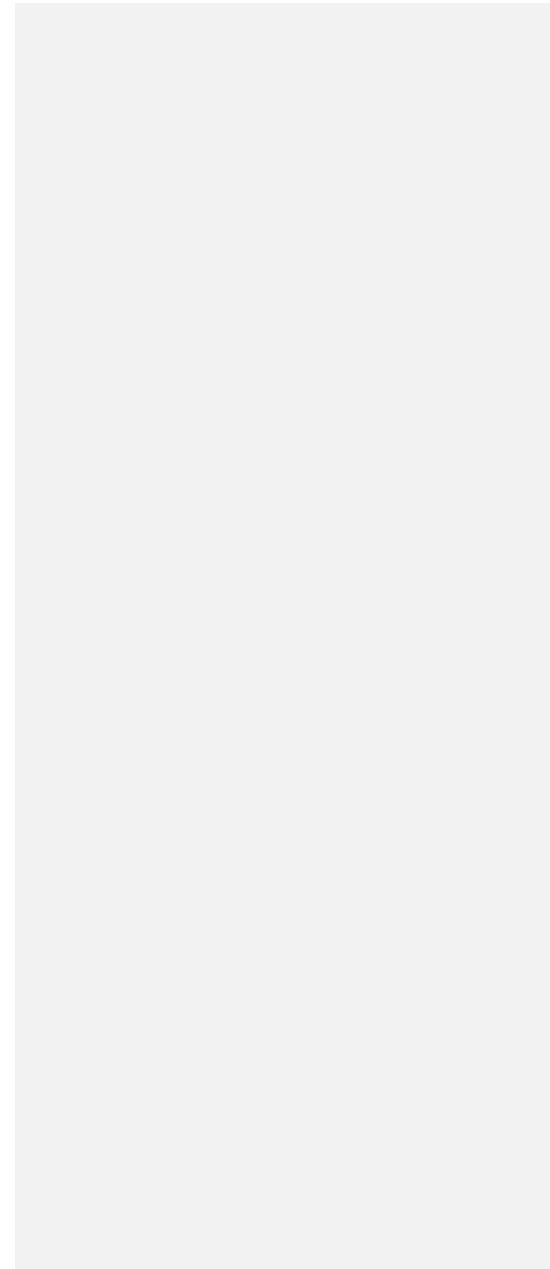
red blood cells: Solid, saucer-shaped cells, that pick up oxygen at lungs, and deliver it all over body.

stomach: Part of the body system that breaks food into bits small enough for blood to carry.

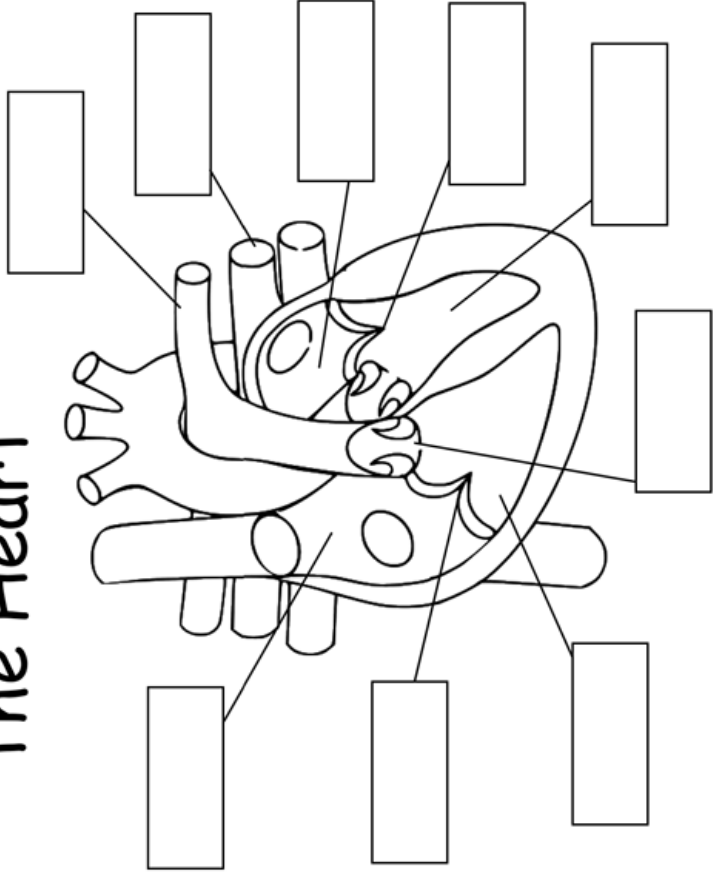
used blood: Blood on its way back to lungs is low in oxygen, high in wastes, and dark red (or blue) in colour.

veins: Tubes that carry blood back to heart.

Appendix D



The Heart



Right Atrium
Left Atrium
Right Ventricle
Left Ventricle
Tricuspid Valve

Pulmonary Valve
Pulmonary Artery
Pulmonary Vein
Mitral Valve

Deoxygenated blood goes into the _____. From there, it travels through the _____ into the _____. Then, it travels through the _____ into the _____ where it takes the deoxygenated blood into the lungs where it is mixed with oxygen. The oxygenated blood travels from the lungs through the _____ into the _____. Then it goes through the _____ into the _____, which pumps the oxygen-rich blood through the rest of the body.

Appendix E

Exercise and Heart Rate

- 1) Sit down and relax for one minute: Resting Heart Rate: _____ / 15 seconds x 4 = _____ beats/minute (heart rate)
- 2) Jump rope for 1 minute at a normal pace: Exercising Heart Rate #1: _____ / 15 seconds x 4 = _____ beats/minute (heart rate)
- 3) Jump Rope as fast as you can for 1 minute: Exercising Heart Rate #2: _____ / 15 seconds x 4 = _____ beats/minute (heart rate)
- 4) Jump Rope for 5 minutes at a normal pace: Exercising Heart Rate #3: _____ / 15 seconds x 4 = _____ beats/minute (heart rate)

Graph your results with a double bar graph:

Questions:

- 1) Find another pair and compare your graphs – what are some similarities and differences?
- 2) What is the difference between your heart rate when resting and exercising?
- 3) As you start to do an activity/exercise, what happens to your heart rate?
- 4) If you exercise regularly, how does this help your heart?
- 5) How much exercise do you think you should get in a day and in a week?

