

## Pre-visit lesson: Survival skills

### 1. Lesson Plan Information

Subject/Course: Science-Understanding Life Systems/Maintaining Healthy Organ Systems

Grade Level: 5

Topic: Survival, Human Organ Systems (STEM)

Name:

Date:

Time:

Length of Period:

### 2. Expectation (s)

***Expectation(s) (Directly from the Ontario Curriculum):***

*Overall Expectations*

2. Investigate the structure and function of major organs of various human body systems

3. Demonstrate an understanding of the structure and function of human body systems and interactions within and between systems

*Specific Expectations*

2.2 use scientific inquiry/experimentation skills to investigate changes in body systems (e.g., heart rate, breathing, body temperature) as a result of physical activity (e.g., exercise, resting, eating).

2.4 Use appropriate science and technology vocabulary, including circulation, respiration, digestion, organs, and nutrients, in oral and written communication

3.1 Identify major systems in the human body (e.g., musculoskeletal system, digestive system, nervous system, circulatory system) and describe their roles and relationships

3.2 Describe the basic structure and function of major organs in the respiratory, circulatory and digestive systems

3.3 identify interrelationships between body systems (e.g., the respiratory system provides oxygen and remove carbon dioxide for the circulatory system).

The Ontario Curriculum: Grades 1-8: Science. (2007). Toronto: The Queen's Printer for Ontario. Pg. 98-100.

***Learning Skills (Where applicable):***

Collaboration

Independent Work

***What do I want the learners to know or be able to do?***

The lesson prior to this activity should be based on defining human organ systems. This lesson will allow students to explore more in-depth how each system works and how the systems are interrelated.

Split your class into groups. Have one student lay down and have their body traced on a large piece of paper. The learners can take 10-15 minutes to draw the human organ systems onto the paper and write in their own definitions of the basic functions. The tracing and defining can be done before this lesson or during. Learners will be able to refer to their chart/diagram or add to it during the activity.

The activities are based on the different body systems (skeletal/muscular, circulatory, respiratory, digestive, and nervous). Learners should have a basic knowledge of how they work and how they are related to each other.

Organize your class into 8 centres. Each centre will have an information card with instructions. Each learner will have a sheet to fill out.

### **Skeletal System**

Question: Why do we have bones? What are bones made out of?

Activity:

Have an egg soaking in vinegar overnight. The learners can pass around the egg to notice its texture (soft and rubbery). Learners can compare the soaked egg with a non soaked egg and notice the differences. The instruction sheet will explain that the shell of an egg is made out of calcium.

Question: What happened to the calcium? What happens when we don't get enough calcium? Where can we get more calcium?

Have a x-ray of a bone for students to look at. Ask students to brainstorm some ways that they can protect their bones.

### **Muscular System**

Question: What do muscles help us do?

Exercise: Strength, Endurance, Flexibility

Activities:

Strength: Push Ups for 1 min

Endurance: Run in place for 1 min

Flexibility: V- sit for 1 min

Question: What muscles are used to do these activities? What other parts of the body are helping you to move in these ways?

### **Circulatory System**

Question: What is the largest muscle in the body? What does the heart do?

Activity: Find resting pulse. Find a pulse on the neck. Count how many beats in 10 seconds. After do an exercise, for example, jumping jacks for one minute, then find a pulse and count many beats in 10 seconds.

Questions: Why muscles need more oxygen?

Question: What have you learned about the circulatory system?

### **Respiratory System**

Question: How do we get the oxygen we need? What organ do we use?

Activity: Learners will blow into a balloon as big as they can. Learners will use a long piece of string to measure the circumference of the balloon.

Question: What did you learn about the Respiratory system?

### **Digestive System**

Question: How do we get the energy we need? What are the parts of the digestive system? (mouth, esophagus, stomach, small intestine, and large intestine).

Activity: Have learners place crackers and orange juice into a ziplock bag to simulate the stomach. Also shows the stomach is acidic and muscles moving the walls of the stomach mash up the food.

### **Nervous System**

Question: How does your body know what to do? What protects the brain?

Activity: Have students line up. One student will be the brain. Have each of the students pick an activity (clap once, jump once, strike a pose, etc.) When the brain walks down the line and taps you on the shoulder you have to do your activity. Have the group rotate so all of the students have a chance to be the brain.

### **Today learners will:**

Engage with human body systems in interactive ways. Learners will complete a worksheet and begin to explore the functions of the body systems and the ways in which the systems are interrelated.

### **4. Assessment/ Evaluation**

*Based on the application, how will i know students have learned what I intended?*

Learners will hand in the worksheet as an exit ticket out of class. The worksheet will be marked for understanding and handed back to the students the next day. Learners will place worksheet in their Science binder as a reference. Throughout the duration of the class the teacher will be

monitoring and helping. The teacher can make anecdotal records to track Collaboration and Independent Work.

### **5. Learning Context:**

#### **The learners:**

*What prior experiences, knowledge and skills do the learners bring with them to this learning experience?*

Learners will have a general understanding of how each system works: circulatory system, nervous system, respiratory system, digestive system, skeletal system, and muscular system. The students will be able to define and explain the basic functions each systems.

#### **Learning Environment:**

The teacher will set up 7 tables for each centre/activity. The teacher will number each table off from one to seven. The teacher will create seven different groups, these groups will move from one table to the next, until each activity is completed. The students will have cards at each centre explaining how to complete each activity. The students will work through each activity and fill out the worksheets that will be located at each table.

#### **Materials:**

- Egg soaked in vinegar
- An x-ray of a broken bone
- Cards labeled: oxygen, carbon dioxide.
- Crackers
- Orange Juice
- Ziplock Bags
- Balloons
- String
- Rulers

### **6. Teaching/Learning Strategies**

#### **Introduction:**

**How will I engage the learners? (e.g., motivational strategy, hook, activation of learners prior knowledge, activities, procedures, compelling problem).**

(5 mins)

Learners will come into the classroom and on the board there will be written instructions; "Please put all of your belongings away and sit quietly at your desk."

<https://www.youtube.com/watch?v=jYZIWYRHRReM>

Prepare video, Circulatory System Rap, and play it for students.

After the clip is shown turn the lights back on and ask students what they thought/learned while watching the clip.

Split the class into groups and introduce science centres.

**MIDDLE:**

**Teaching: *How does the lesson develop?***

**How we teach new concepts, processes (e.g., gradual release of responsibility - modeled, shared, and guided instruction).**

The class will be divided into even groups for each centre. If you have all seven centres, than you will have seven groups.

The teacher will get the students attention, using a class management strategy. The teacher will number off the students from one to seven. Once all the students have a number, the teacher will explain each centre, so the students have a clear idea of what is expected of them. "Here you have seven different centres. At each centre there are worksheets that need to be followed in order to complete each task."

The teacher will go to the first centre, The Skeletal System. For this centre the teacher will need to soak an egg in vinegar overnight and have an regular egg as well. "At this centre each student will work together to complete the following activity. First, you need to answer second questions, 'Why do we have bones? and What are bones made out of?' Once these questions have been completed, you can pass around both the eggs around the group and write down any similarities and differences between each egg".

"After this is complete, you need to answer the following questions, 'What happened to the calcium in the egg? What happens when we don't get enough calcium? Where can we get more calcium".

"The next centre is called, The Muscular System. At this centre, you will need to answer the following question, 'What muscles help us do?'. After you will complete the following activities, push ups for one minute, run in place for one minute, and do a V-sit for one minute (sit on the floor and your legs are in a shape of a v, and you need to try to touch your toes). When you are done completing these activities, you need to question the following questions, 'What muscles are used to do these activities?' 'What other parts of the body are helping you move in these ways?"

The teacher will walk over to the next centre, "This is the Respiratory System centre. At this centre, you need to answer these questions, 'How do we get the oxygen we need?' and 'What organ do we use?' The students will blow into these balloons as big as you can, please only take one. Once you have tied up your balloon, use the long pieces of string, wrap it around the balloon to measure the circumference of it. After this is completed, you need to answer, 'What did you learn about the respiratory system".

“The next centre is called, The Digestive System. you will need to answer, ‘How do we get the energy we need?’, ‘What are the parts of the digestive system? (mouth, esophagus, stomach, small intestine, and large intestine)’. You will place these crackers and this orange juice into a ziplock bag to simulate the stomach. Answer the following questions that are located on your worksheet”.

“The next centre is called, the Nervous System. Each student will answer the following questions, ‘How does your body know what to do?’ and ‘What protects the brain?’ After this is completed, select one student to be the brain and the rest of the group will line up in a line. Each student will pick an action, for example, clap once, jump, strike a pose. The brain will walk down the line and tap (with two fingers) on the shoulders, you need to do your activity. All the group members will have a turn to be the brain. Once everyone has had the chance to be the brain, the group can move to the next station”.

“The last centre is the Circulatory System. Each group member will answer the following questions, ‘What is the largest muscle in the body?’ and ‘What does the heart do?’. After the group members will find their resting pulse, for example, find a pulse on the neck. Each member will count how many beats in 10 seconds”. The students can use the clock that is located in the classroom on the wall. “After do an exercise, for example, jumping jacks for one minute, then find a pulse and count many beats in 10 seconds. Please record each pulse. After you will need to answer two questions, ‘Why muscles need more oxygen?’ and ‘What have you learned about the circulatory system?’”

“Once all of your group members have completed the activity at the centre, as a group you can move on to the next station. Please keep the worksheet with you when you are travelling from one centre to the next”.

### **Consolidation and/or Recapitulation Process:**

***How will I bring all the important ideas from the learning experiences together for/with the students? How will I check for understanding?***

Once the centres have been completed, the students will get together as a large group and talk about what they have learned through each centre. The teacher will ask the students, “What was one thing you learned today?” The teacher will write down on chart paper the new knowledge the students have gained from the centres.

### **Application:**

***What will learners do to demonstrate their learning? (Moving from guided, scaffolded practice, and gradual release of responsibility.)***

The learners will demonstrate the learning by completing the worksheets.

