Biology

Biology

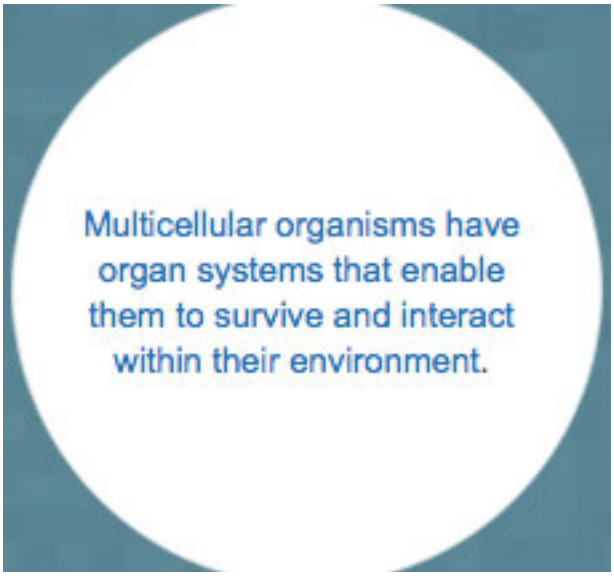
Grade 5

Biology

Grade 5

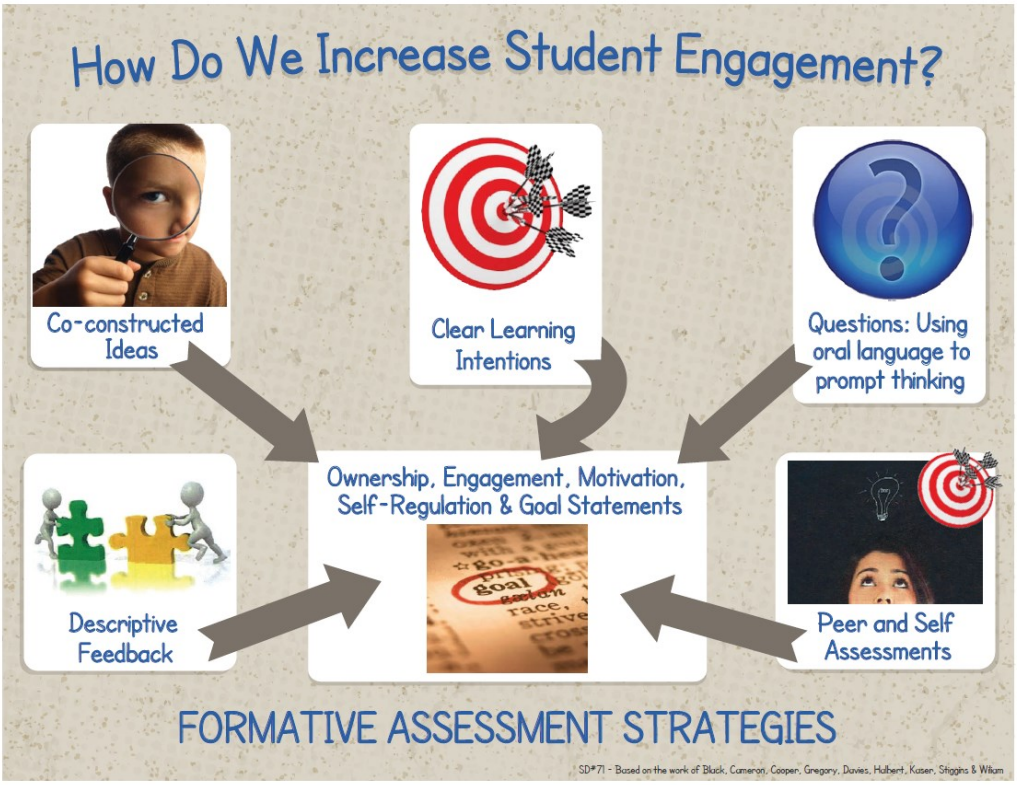
Grade 5 Science - Biology

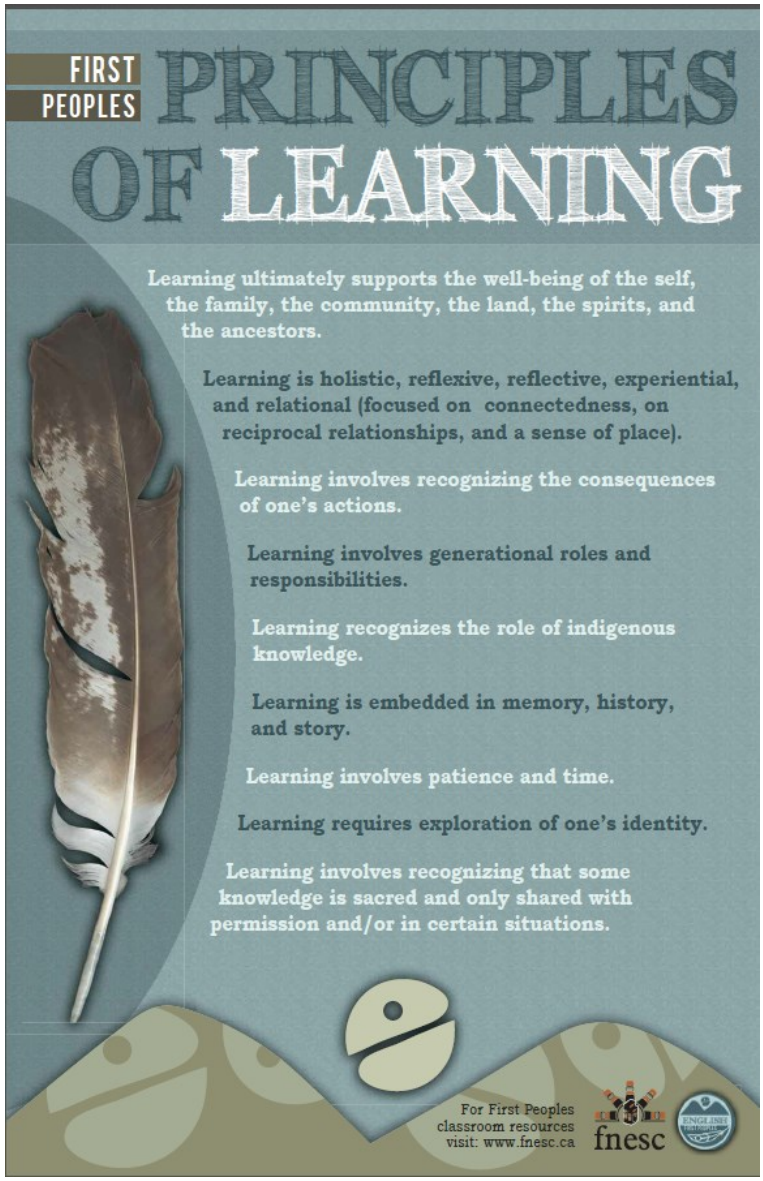
Big Idea



Content

- basic structures and functions of body systems:
  - digestive
  - musculo-skeletal
  - respiratory
  - circulatory


How Do We Increase Student Engagement?
Co-constructed Ideas
Clear Learning Intentions
Questions: Using oral language to prompt thinking
Ownership, Engagement, Motivation, Self-Regulation & Goal Statements
Descriptive Feedback
Peer and Self Assessments
FORMATIVE ASSESSMENT STRATEGIES
SD#71 - Based on the work of Black, Cameron, Cooper, Gregory, Davies, Hulbert, Kaser, Stiggins & Wiliam


FIRST PEOPLES
PRINCIPLES OF LEARNING
Learning ultimately supports the well-being of the self, the family, the community, the land, the spirits, and the ancestors.
Learning is holistic, reflexive, reflective, experiential, and relational (focused on connectedness, on reciprocal relationships, and a sense of place).
Learning involves recognizing the consequences of one's actions.
Learning involves generational roles and responsibilities.
Learning recognizes the role of indigenous knowledge.
Learning is embedded in memory, history, and story.
Learning involves patience and time.
Learning requires exploration of one's identity.
Learning involves recognizing that some knowledge is sacred and only shared with permission and/or in certain situations.
For First Peoples classroom resources visit: www.fnesc.ca
fnesc


C
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A framework for Inquiry

Significant Content: A focus on important knowledge and concepts derived from standards. Students should find the content to be significant in terms of their own lives and interests.

A need to Know: Activate learner curiosity. Engage student interest and initiate questioning with an entry event: this could be a story, a video clip, a photograph...

A Driving Question: A question that captures the heart of the inquiry in clear, compelling language, giving students a sense of purpose and challenge.

Authentic Purpose: Establishing an authentic purpose for the tasks we invite our learners to explore, enriches learning opportunities.

Voice and Choice: Guided by the teacher, learners have voice and choice in terms of design, what resources they will use and how they structure their time.

Revision and reflection: Learners go through a process of seeking feedback from their peers to think in-depth about their inquiry. Students learn that revision and reflection are frequent features of real-world work.

In-depth Inquiry: Learners follow a trail that begins with their own questions, leading to a search for resources and the discovery of answers and ultimately leads to generating new questions, testing ideas and drawing their own conclusions.

21st Century Competencies: Collaboration, communication, creativity, critical thinking, problem solving and social responsibility.

Adapted from: *Larmer, J. & Mergendoller, J. (2012). 8 essentials for project-based learning. Originally published in 2010 in Educational Leadership, 68(1), 34.*

Teaching Science:

The Art of our Professional Practice

Core competencies are at the centre of the redesigned curriculum. We invite you to look to the competencies and what we know as wise practice (AFL, inquiry, Aboriginal Ways of Knowing) to artfully design learning opportunities for our students.

This science kit was created by SD 71 educators. Within these pages you will find hands-on experiments, activities, lesson ideas, web links, and place-based experiences to engage the curiosity of our learners.

Curriculum Model

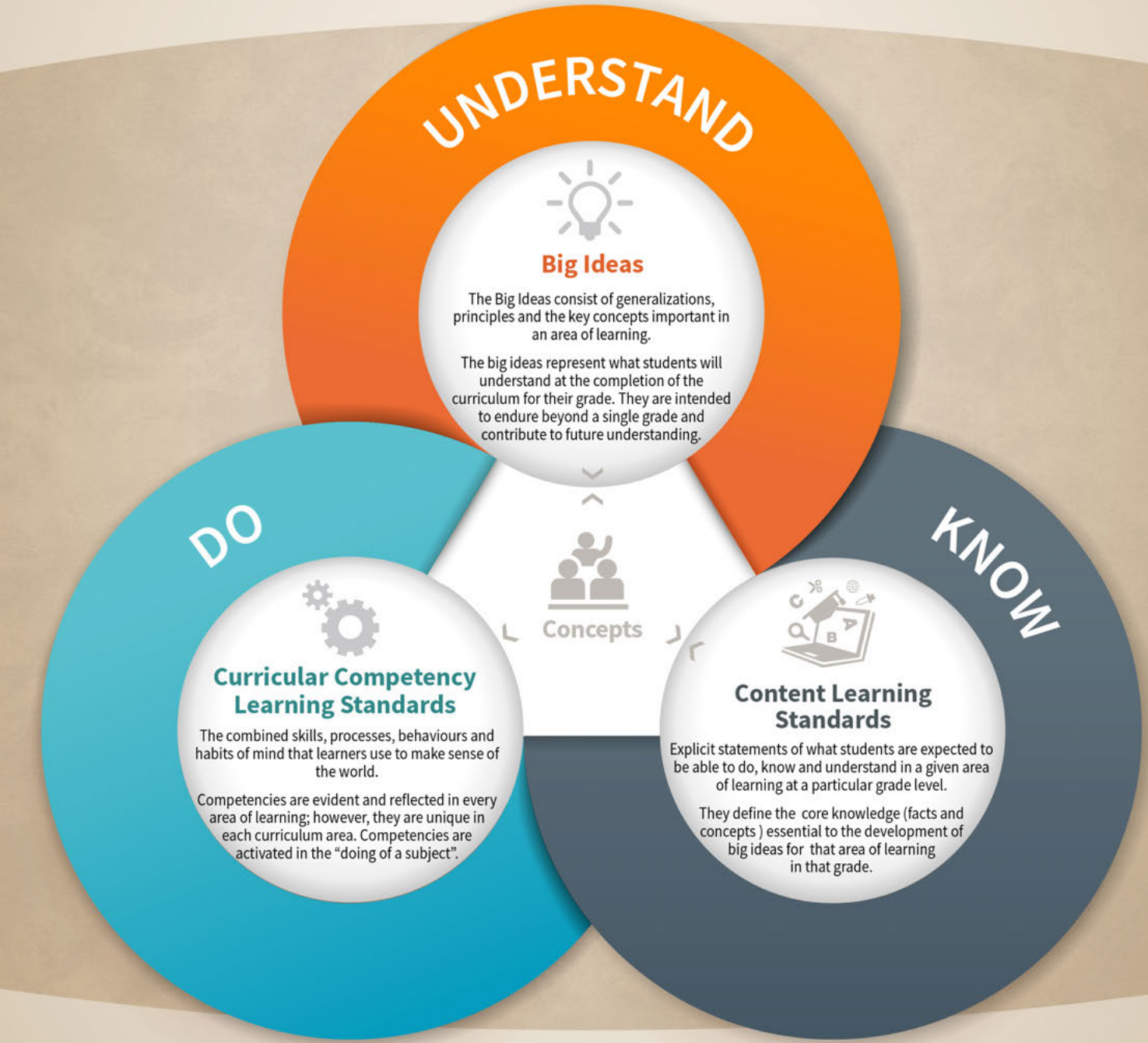
CONCEPT-BASED COMPETENCY-DRIVEN APPROACH TO LEARNING

The redesigned curriculum develops around key content, concepts, skills and big ideas that foster the higher-order thinking demanded in today's world.

The approach will facilitate development of citizens who are competent thinkers and communicators, and who are personally and socially competent in all areas of their lives.

Core competencies are the sets of intellectual, personal, and social - emotional proficiencies that all students need to develop to engage in deeper learning and to support lifelong learning.

In BC, the core competencies are communication, creative thinking, critical thinking, positive personal and cultural identity, personal awareness and responsibility, and social responsibility.



The curriculum must be learner- centred, flexible and maintain a focus on literacy and numeracy, while supporting deeper learning through concept-based and competency-driven approaches.

Concept-based learning and the development of competencies engage students in authentic tasks that connect learning to the real world.

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BIG IDEAS

Multicellular organisms have organ systems that enable them to survive and interact within their environment. (Questions to support inquiry with students: How do organ systems interact with one another? How do organ systems interact with their environment to meet basic needs?)	Solutions are homogeneous mixtures. (Questions to support inquiry with students: What are homogeneous solutions? What are their uses?	Machines are devices that transfer force and energy. (Questions to support inquiry with students: How do machines (natural and human-made) transfer force and energy? What natural machines can you identify in your local environment?)	Humans use earth materials as natural resources. (Questions to support inquiry with students: How do we interact with water, rocks, minerals, soils, and plants? Why is Earth considered a closed material system?)

Learning Standards

Curricular Competencies

Students are expected to be able to do the following:

Questioning and predicting (*A system is a set of interacting or interdependent pieces or components that come together to form a whole. A system occupies a physical or a temporal space within a set environment, has a representative form, and possesses a purpose or function. Key questions about systems: How do the systems of the human body work together? How can you observe the concept of interconnectedness within ecosystems in your local area?*)

- Demonstrate a sustained curiosity about a scientific topic or problem of personal interest
- Make observations in familiar or unfamiliar contexts
- Identify questions to answer or problems to solve through scientific inquiry
- Make predictions about the findings of their inquiry

Planning and conducting

- Explore and pose questions that lead to investigations
- With support, plan appropriate investigations to answer their questions or solve problems they have identified
- Decide which variable should be changed and measured for a fair test
- Choose appropriate data to collect to answer their questions
- Observe, measure, and record data, using appropriate tools, including digital technologies
- Use equipment and materials safely, identifying potential risks

Processing and analyzing data and information

- Experience and interpret the local environment
- Construct and use a variety of methods, including tables, graphs, and digital technologies, as appropriate, to represent patterns or relationships in data
- Identify patterns and connections in data
- Compare data with predictions and develop explanations for results

Content

Students are expected to know the following:

- basic structures and functions of body systems:
  - **digestive**
  - **musculo-skeletal**
  - **respiratory**
  - **circulatory**
- **solutions and solubility** (*homogeneous solutions: uniform solutions (e.g., apple juice, coffee) that can be separated through distillation, evaporation, and crystallization; solubility of solids, liquids, and gases (e.g., salt [solid], honey [liquid], carbon dioxide [gas in water makes pop]); properties of solutions: concentration, pH, etc.; dissolving: process of forming a solution*)
- properties of **simple machines** (*levers, wedge, inclined plane, wheel and axle, pulley, and screw*) and their **force effects** (*force effects include changing direction and multiplying force*)
- machines:

• Demonstrate an openness to new ideas and consideration of alternatives	– **constructed** – **found in nature (***the lever is the basis of nearly every aspect of the musculoskeletal system)* • **power (***examples include students racing up a hill, machine power ratings, motors)* — the rate at which energy is transformed • local types of **earth materials (***include mineral, rock, clay, boulder, gravel, sand, soil)* • the **rock cycle (***includes mineral formation)* • Aboriginal concept of **interconnectedness** (*everything in the environment is one/connected (eg., sun, sky, plants, animals, and humans))* in the environment • the nature of **sustainable practices (***different scientific perspectives and worldview interpretations of sustainability (eg., Is resource extraction/harvesting sustainable? Can anything be sustainable?); sustainable resource use: renewable and non-renewable resources)* around **BC's living and non-living resources (***living resources include forests, fish, agriculture; non-living resources include water, minerals, fossil fuels)*

Learning Standards (continued)

Curricular Competencies	Content
Evaluating • Evaluate whether their investigations were fair tests • Identify possible sources of error • Suggest improvements to their investigation methods • Identify some of the assumptions and given information in **secondary sources** • Demonstrate an understanding and appreciation of evidence • Identify some of the social, ethical, and environmental implications of the findings from their own and others' investigations **Applying and innovating** • Contribute to care for self, others, and community through personal or collaborative approaches • Co-operatively design projects • Transfer and apply learning to new situations • Generate and introduce new or refined ideas when problem solving **Communicating** • Communicate ideas, explanations, and processes in a variety of ways • Express and reflect on personal, shared, or others' experiences of place	

Student Name _____ **Learning Map - Grade Science**

Big Idea : _____

_____ (Understand)

Criteria for Successful Learner Traits/ Core Competencies	Student Reflections:
I can	
I can	

Criteria- Teacher and student assessment

DS	GS	I	Teacher
With Direct Support	With Guided Support	Independently	Teacher initials for verification

Legend

* Student assessment

√ Teacher assessment

Criteria for Curricular Competency (Do)	DS → GS → I	Evidence and date accomplished:	Teacher (initials)
I can			
I can			
I can			
I can			

Criteria: Science Content (Know)	DS → GS → I	Evidence and date accomplished:	Teacher (initials)
I can			
I can			
I can			

Student Voice:

The Successful Learner Trait that I used the most was _____ when I_____.

To improve an inquiry project next time, I will _____

_____.

Teacher Feedback:

Cheryl.Adebar@sd71.bc.ca

Big Idea : Multicellular organisms have organ systems that enable them to survive and interact within their environment.

Suggested questions to support the inquiry: How do organ systems interact with one another? How do organ systems interact with their environment to meet basic needs?

(Understand)

Core Competencies (collaboration, communication, creativity, critical thinking, problem solving and social responsibility): **I can**

-recount simple experiences and activities and tell something I learned. (Communication)
-ask open ended questions and gather information. (Critical Thinking)

Criteria- Teacher and student assessment

DS	*GS*	*I*	*Teacher*
With Direct Support	*With Guided Support*	*Independently*	*Teacher initials for verification*

Legend

* Student assessment

√ Teacher assessment

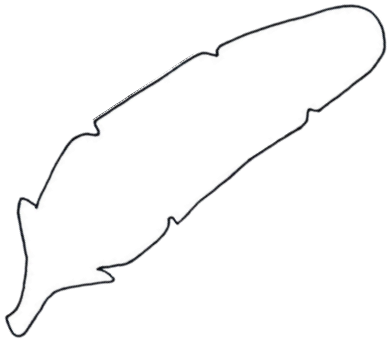
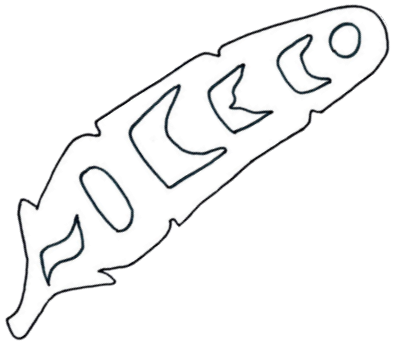
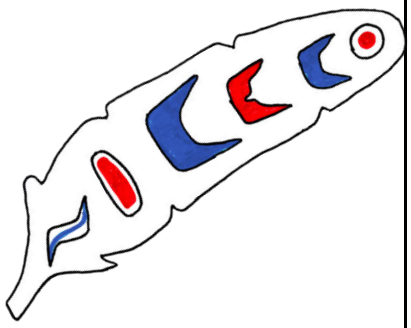
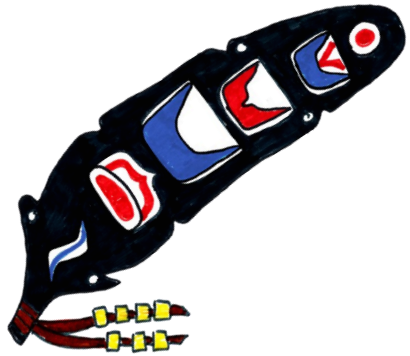
Criteria: Curricular Competency (Do)	**DS GS I →**	**Evidence and date accomplished:**	**Teacher (initials)**
I can demonstrate curiosity about body systems.			
I can identify questions to answer or problems to solve through inquiry.			
I can plan appropriate investigations to answer my questions.			
I can transfer and apply my learning to new situations.			

Criteria: Science Content (Know)	**DS GS I →**	**Evidence and date accomplished:**	**Teacher (initials)**
I can describe the basic structure and function of the digestive system.			
I can describe the basic structure and function of the circulatory and respiratory system.			
I can describe the basic structure and function of the musculoskeletal system.			

Student Voice:

Teacher Feedback:

Cheryl.Adebar@sd71.bc.ca

Images by Nelson Wesley Arden Elementary, S.D. 71 (2016) Coast Salish Prince Rupert	 ***… direct support***	 ***… guided support***	 ***… independent***	 ***…applying innovatively***

Name(s): _____ Date: _____

STRIVING FOR SUCCESS

…applying innovatively!

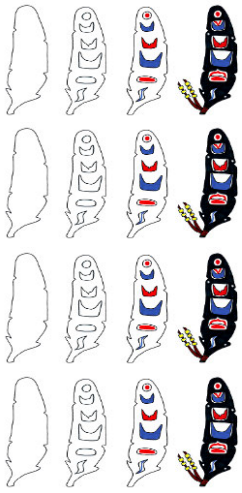
…independent

…guided support

…direct support

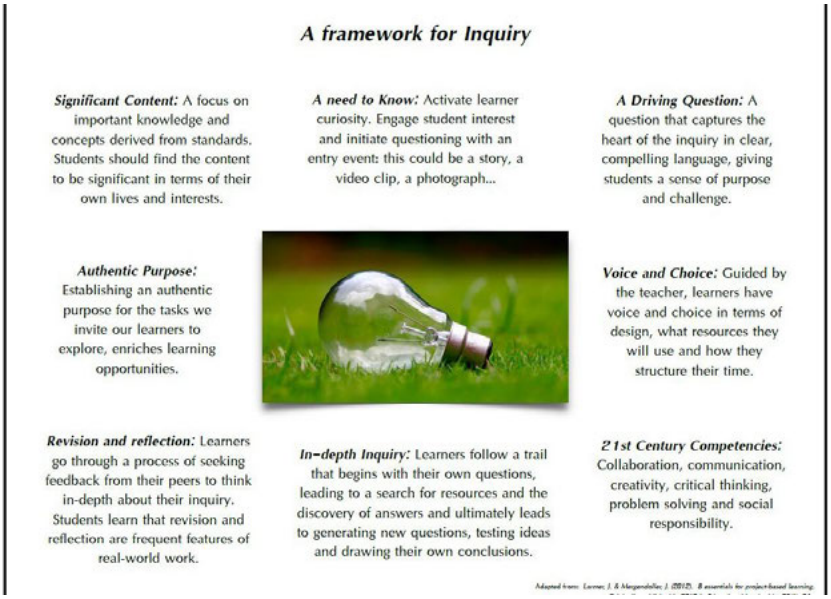
TASK TO COMPLETE:

CRITERIA:



SELF ASSESSMENT:

TEACHER ASSESSMENT COMMENTS:



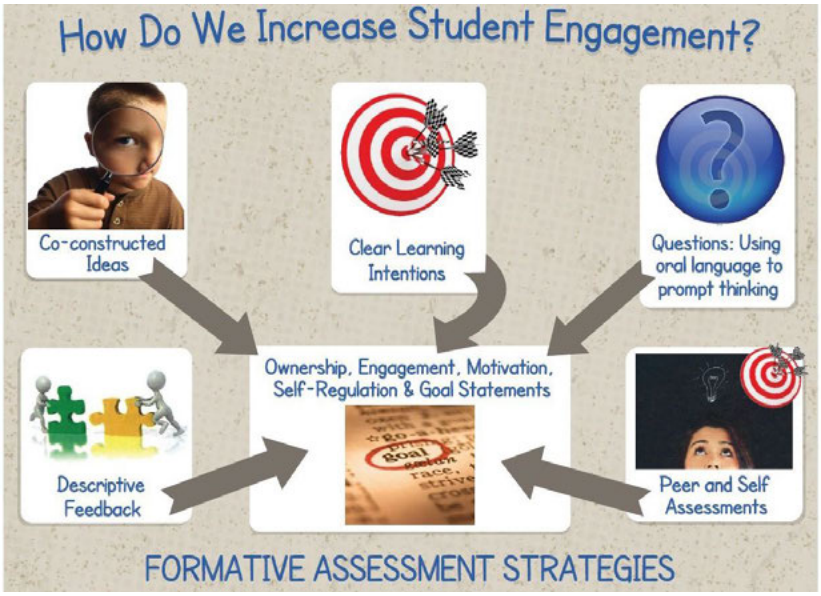
Suggested Ways to Engage Students in Science Inquiry:

Establishing a need to know: What does the human heart really look like? How does it work? https://www.youtube.com/watch?v=oHMmtqKgs50 Driving questions: How do organ systems interact with one another? How do organ systems interact with their environment to meet basic needs?

Make a batch of edible blood (see lesson attached) then split the class into 4 groups. Each group takes a blood component to learn about deeply and then teach back to the rest of the class.
In-depth inquiry – Students select one system to explore more deeply with their own inquiry question.

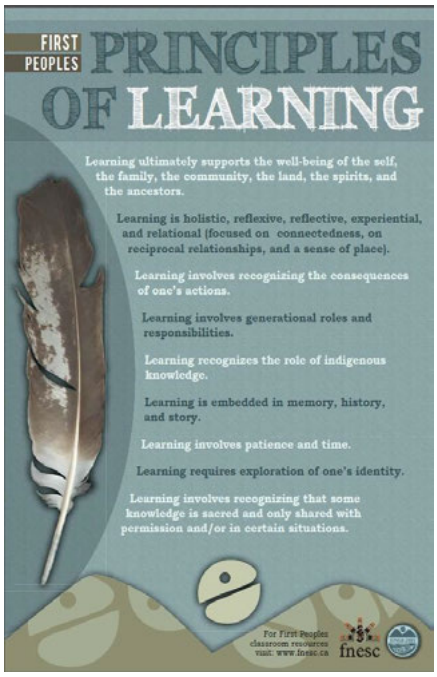
In-depth inquiry: Students select a body system to explore more deeply through their own inquiry questions that incorporate big ideas of how it helps with survival, and/or could compare this human body system to that of another multicellular organism.

Check out the Heart and Stroke Foundations *Heart Healthy Kids* Grade 5 Resource Package
http://www.heartandstroke.com/atf/cf/%7B99452D8B-E7F1-4BD6-A57D-B136CE6C95BF%7D/3971gra5.pdf
also visit www.tobaccofacts.org for tobacco industry's poster child



Suggested Ways to Embed Assessment ***for*** Learning Strategies:
Ask and invite deep-thinking questions: How do your lungs work? How do the heart and lungs work together? What's in blood? Share clear learning targets: I can explore the structure and function of the circulatory system.
Co-construct criteria for creating a model of the human body showing the 4 systems – digestive, musculo-skeletal, respiratory and circulatory (see lesson attached) Skeletal Measurements activity: Where do I measure? (see activity) – What is the greatest difference in femur length in class?
Questioning and co-constructing ideas: How can we design a protective covering strong enough to keep an egg from breaking?
Students use learning maps to self-assess (see examples included)

C T PS



Suggested Ways to Weave Aboriginal Ways of Knowing within this unit:

Focus on interconnected, holistic ways of teaching about the body systems (how they work together).
Explore arranging a classroom visit from Barb Whyte/Suzanne Camp/Diane McLean to discuss traditional plants and their healing/restorative properties to body systems.

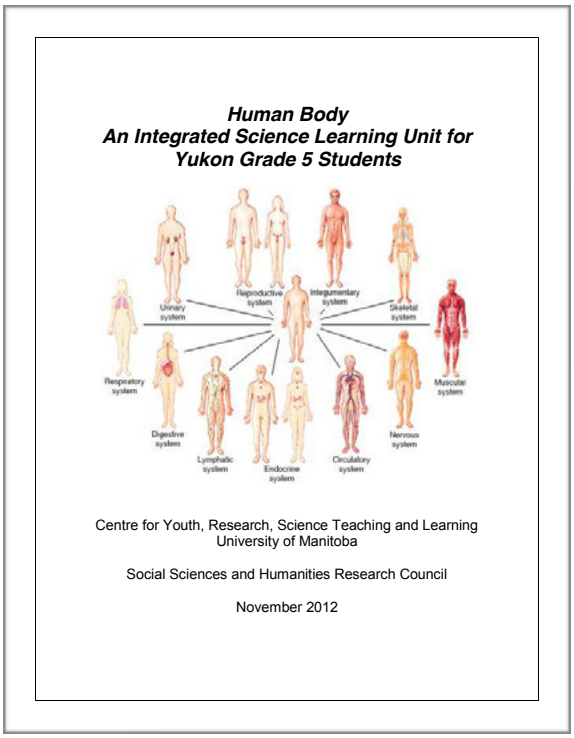
Arrange a field trip to Harmonic Arts Botanical Dispensary https://harmonicarts.ca/
Watch Yarrow Willard video – St. John's Wort, Medecine for the People
https://www.youtube.com/watch?v=w-uxXUF-MdI

Contact Gunter Brother's Meats for Pig Brains to see if they might offer pig hearts and/or pig lungs with trachea attached (this request will need to be made on school letterhead). Contact LRC for dissecting trays etc.

Access a 76 page pdf that shares Human Body Systems lessons from an Aboriginal perspective, Google –
Human Body An Integrated Science Learning Unit for Yukon …
www.umanitoba.ca/outreach/crystal/YukonResources/**Human Body** Sys… · PDF file

C T PS

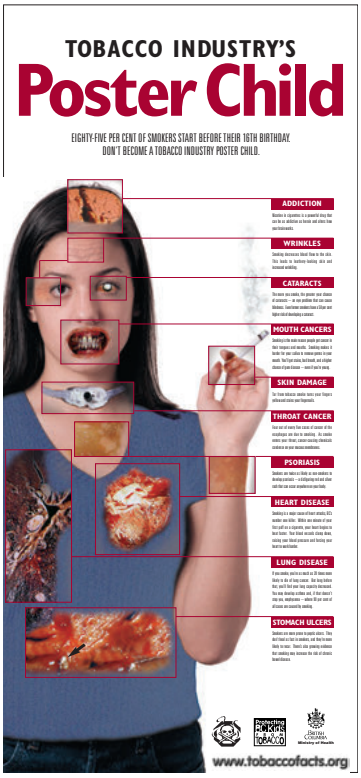
Suggested Resources



Source: Human Body - An Integrated Science Learning Unit for Yukon Grade 5 Students. A fabulous resource that offers Human Body Systems lessons and activities with an Aboriginal perspective.

http://www.umanitoba.ca/outreach/crystal/YukonResources/Human%20Body%20Systems%20for%20Students.pdf

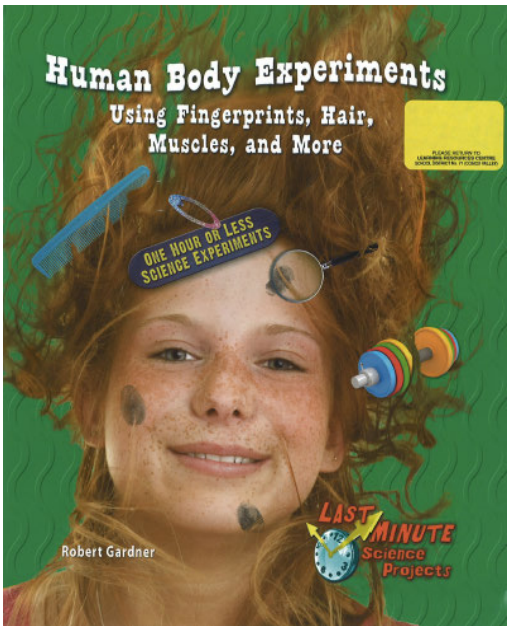
p. 14-36: Skeletal System
p. 47-53: The Respiratory System.
p. 54-56: Heart and Lungs.
p. 57-59 : Parts of the Circulatory System.
p. 60-65: Organs of the Digestive System.



Source: Tobacco Industry's Poster Child. 85% of smokers start before their 16th birthday. Don't become a tobacco industry poster child.

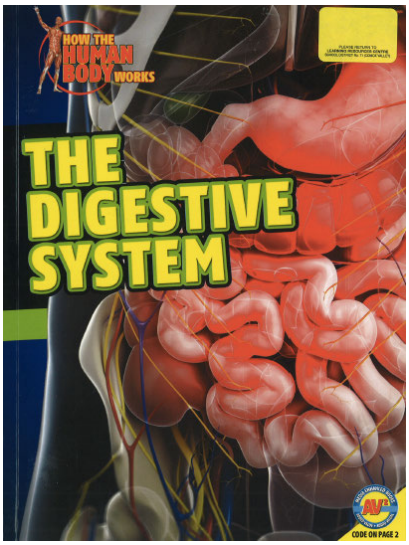
http://www.ocaithb.org/resources/tobacco/posterchild.pdf

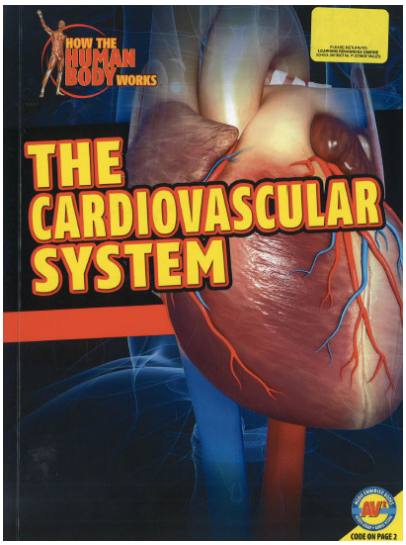
Suggested Resources

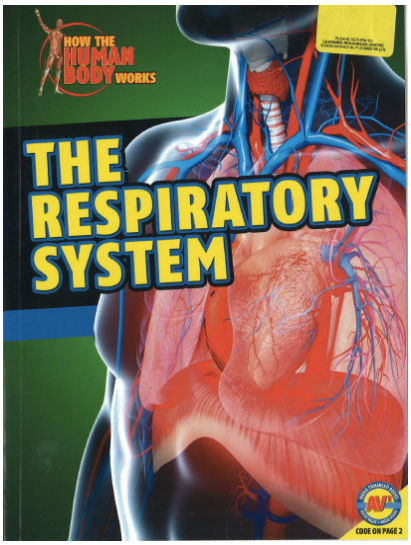


Source: Human Body Experiments - Using Fingerprints, Hair, Muscles and more.

Description: Includes human body experiments that can be completed in 30 minutes, 15 minutes or as little as 5 minutes.





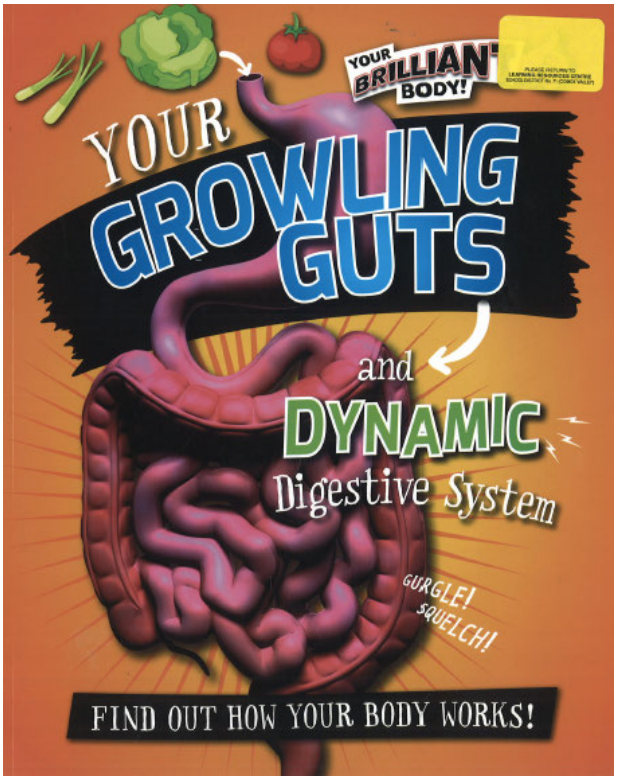


Series: How the Human Body Works

Description: Engaging information and text features with guiding questions - What is the system? How does the system work?

Includes studying the system, keeping healthy and how body systems work together.

Suggested Resources

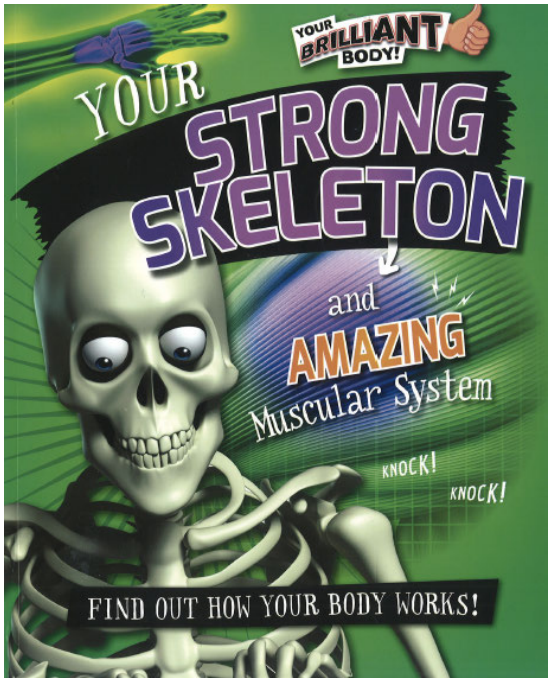


Source: Your Growling Guts and Dynamic Digestive System.

Description: Includes activities and diagrams to explain body parts and processes and help readers understand key body functions.

Series: Your Brilliant Body - *Your Strong Skeleton and Amazing Muscular System.*

Description: Beautiful eye-catching text features and rich information. Includes activities and diagrams to help learners explore and understand structure and function of the human musculoskeletal system.



Web links for Biology Grade 5

Find Science Lessons and Tools for K-12.
http://sciencenetlinks.com

A link to Science videos Grades 1-7.
http://www.makemegenius.com

A Kid's Guide to Life Sciences: The Human Body Systems
http://www.accuterm.com/life-sciences.html

How the Body Works - a great website for Kids - includes videos, articles, and activities.
http://kidshealth.org/kid/htbw/

Biology4Kids - information and video links about Body Systems.
http://www.biology4kids.com/files/systems_main.html

A 2D and 3D human anatomy system explorer!
http://www.innerbody.com

I Can Teach My Child - Human Body Activities for Kids - great ideas for models, projects, demonstrations.
http://www.icanteachmychild.com/human-body-activities-for-kids/

A Digestive System animated video from Kids Health.
https://www.youtube.com/watch?v=JnzwbipJuAA

A Cow's Digestive System (video clip, 1:35)
https://www.youtube.com/watch?v=svw5KA8YlAA

An animated video teaching kids about the human body.
https://www.youtube.com/watch?v=rg34VwymLXc

Making a model of the Respiratory System.
https://www.youtube.com/watch?v=D4a-HOvzmQY

Kid Science - A Balloon Lung video
https://www.youtube.com/watch?v=vRv2zYH5p9k

A Respiratory System Song video.
https://www.youtube.com/watch?v=p4zOXOM6wgE

A Circulatory System lesson package from the Heart and Stroke Foundation
http://www.heartandstroke.com/atf/cf/%7B99452D8B-E7F1-4BD6-A57D-B136CE6C95BF%7D/3971gra5.pdf

The Franklin Institute. The Heart: The Engine of Life
https://www.fi.edu/heart-engine-life

The Franklin Institute. Your Living Blood
https://www.fi.edu/heart/your-living-blood

Body Systems and Survival… What helps organisms survive? Students can investigate the relationship between the structure of various human and plant systems and their function in contributing to the survival of the organism as a whole. In particular students investigate the digestive, circulatory, respiratory and reproductive systems of humans and compare them with systems of a typical plant.

http://www.education.vic.gov.au/school/teachers/teachingresources/discipline/science/samples/Pages/bodysystems.aspx

To access a 76 page pdf that shares Human Body Systems lessons from an Aboriginal perspective, Google –

Human Body An Integrated Science Learning Unit for Yukon …
www.umanitoba.ca/outreach/crystal/YukonResources/**Human Body** Sys… · PDF file
Human Body An Integrated Science Learning Unit for Yukon **Grade 5 Students**

Kids Health: Your Muscles
http://kidshealth.org/kid/htbw/muscles.html

Muscle Facts for Kids
http://www.sciencekids.co.nz/sciencefacts/humanbody/muscles.html

A fun and interactive children's activity to learn to label and assemble the Skeletal System.
http://www.abcya.com/skeletal_system.htm

Fun Facts for kids about the Human Skeletal System
http://www.sciencekids.co.nz/sciencefacts/humanbody/skeletonbones.html

An animated video about the Skeletal System
https://www.youtube.com/watch?v=lUP-D4dKp14

Comparing animal skeletons to human skeleton…
http://www.eskeletons.org

Digestive System Role-Play

# of Students	Card Type	Location in Digestive System	Function and Actions
2	molars	mouth	molars grind up the food (remove a layer of paper)
4	saliva	mouth	use squirt guns to be enzymes and wet the food
4	peristalsis	esophagus	squeeze the toothpaste in pairs or push food through nylons (to mimic the muscles squeezing)
3	pancreatic juice	stomach	use squirt guns and squish (enzymes and acid)
1	valve	between stomach and small intestine	put the "chyme" through the roll of tape
5	small intestine	small intestine	tear off remaining layers of newspaper and pass nutrients off to the blood
1	gall bladder	off liver	squirt bile into small intestine (use squirt gun)
5	blood	liver	distribute nutrients to body after being held and processed in liver(hand out candies after the flush)
1	valve	between small intestine and large intestine	push newspaper through roll of tape
3	large intestine	large intestine	water absorption - squeeze newspaper and pat dry with towels
1	rectum	rectum	grocery bag that holds the waste (newspaper bits)
1	anus	anus	deposits waste materials from rectum in garbage can (flush!)

List of props:

- side walk chalk
- indiv wrapped candies, wrapped in newspaper layers
- old tubes of toothpate or nylons
- 2 old rolls masking tape
- old towels
- grocery bag
- squirt guns and pail of water
- small trash can

Digestive System Role-Play

Model: Using sidewalk chalk on a concrete space, make two parallel lines about 1 m apart and 10 m long to represent the digestive tract.
Put plastic covered candies into about 5 small ziplocks bags (enough candies for each class member). Wrap up the baggies with layers of news paper.
Have students select a digestive card role. Put down manilla tag cards with the names for the major organs along the tract.
Include Mouth, Esophagus, Stomach, Small Intestines, Liver, Large intestines, Rectum Anus
Starting with the molars, have students in role begin their job, moving on to saliva and down the tract with each student or group of students doing their job.
The "anus" flushes the wastes (leftover paper and plastic) into the toilet (trash can).

Team: _____

Challenge: Measuring the Monstrous Digestive System

Hypothesis

We think our digestive system will be _____ cm long.

Procedure

1. Measure each part of the digestive system in centimeters. Record your data in the chart.

    - Digestion begins in the mouth, so measure and cut a piece of yarn from the front to the back of the mouth. (You can do this by stretching the yarn from the front of your lips to the back of your jaw along your cheek.) _____ cm

    - The esophagus is a tube that connects the mouth and stomach. Measure and cut a piece of yarn the length of the esophagus. (*The esophagus ends just below your rib cage) Tape together the esophagus yarn to the mouth yarn. _____ cm

    - In the stomach, gastric juices break down solid food into liquid. Find the length of the stomach by spreading the fingers of your hand and measuring the span from the thumb to the little finger. Measure and cut a piece of yarn to match this length. Tape the stomach yarn to the esophagus yarn. _____ cm

    - The small intestine is the longest part of the digestive system; it is folded up inside of you so it fits. Food is further digested and absorbed here. Measure your height and multiply by four and cut yarn this length to represent the small intestine. Tape this small intestine yarn to the stomach yarn. _____ cm

    - Last is the large intestine. It is much wider than the small intestine but much shorter. It is about as tall as you are. Undigested material from the small intestine moves to the large intestine before being excreted. Cut yarn to represent the length of your large intestine. Then tape this large intestine yarn to the small intestine yarn. _____ cm

2. Add all the lengths together. This is the approximate length of your digestive system.

Observations

Digestive Organ	Length (cm)
Mouth	
Esophagus	
Stomach	
Small Intestine	
Large Intestine	

Total Length of the Digestive System: _____ cm

Conclusions

3. Why do you suppose your digestive system is so long?

_____

_____

_____

4. A model is a representation of an object or a process or idea. It simplifies and helps to explain whatever it represents. List two things your model helped you learn about the digestive system.

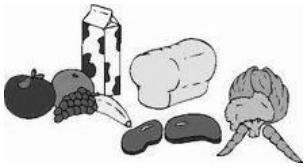
_____

_____

_____

_____

_____




Why do we need to eat???????

List as many reasons as you possibly can on this page





What does our body do with the food we eat??????

List as many ideas as you possibly can on this page

Blood Anyone?

Making up a batch of edible blood

- Begin by asking your group what blood is made up of.
- Have them match the ingredients with the definition on their sheets
- Make up the edible blood into the serving bowl with the following ingredients:

  Plasma – jello – (½ bowl of jello - about 2 cups)
  Red Blood Cells – 1 bag of mini Swedish berries - about 1 ½ cup
  White blood cells – mini marshmellows – ¼ cup
  Platelets – sprinkles – 2 tsp

Begin to eat, but ask them to eat a red blood cell, a bite of plasma, a white blood cell, then some platelets. As you eat discuss the questions below:

Questions to discuss with your group as they eat the edible blood:

- Have students record these responses that you discuss together on their sheets
- Which edible ingredient takes up the greatest percent? (jello)
- Which edible ingredient takes up the smallest percent? (sprinkles & marshmallows)
- How is this model actually like real blood? (the 4 parts, approximate proportions, colour and shape of RBC, colour and texture of plasma, colour of WBC)
- How is this model or batch of blood not realistic? (size and shape of the cells, candy cells, proportions not exact or there would be very few marshmallows and sprinkles, RBC are shaped more like donuts, etc)

Test Tube Graph of Blood Components

- If blood is spun in a machine it is separated out into its components or parts in layers.
- Have the students use the coloured pencils provided to shade in the approximate percentages of each blood component on the test tube graph on their sheet. The test tube is 10 cm long, so 1 cm = 10 %, 5.5cm = 55%, etc.
- Plasma = top layer and is 5.5cm in yellow
- RBC = bottom layer and is 4.4 cm in red
- Platelets and WBC are together in middle and is only 1 mm in gray

Blood, Anyone?

What is our blood made of? Match the four components of blood with the descriptions on the side.

Red Blood Cells (RBC)	a) Syrupy, clear, yellowish liquid that makes up 55% of the blood. It carries dissolved food and wastes.
White Blood Cells (WBC)	b) Small particles that make up ½% of the blood. They help your blood clot.
Plasma	c) These carry oxygen to the body and carbon dioxide away from cells. They make up 44% of the blood.
Platelets	d) These oddly shaped cells make up ½% of the blood. They attack germs and "eat" bits of old blood cells.

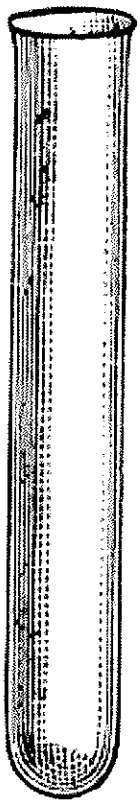
- Using the edible ingredients, make up a "batch" of blood, trying to make the proportions as realistic as possible.

RBC = mini Swedish berries or rockets
WBC = mini marshmellows
Plasma = yellow (Lemon or pineapple) jello
Platelets = sprinkles

Questions to discuss with your group:

- Which edible ingredient takes up the greatest percent? _____
- Which edible ingredient takes up the smallest percent?_____
- How is this model actually like real blood?
- How is this model not realistic?

Complete a percent graph to show approximately what a test tube of blood would look like, with each of the four components of blood separated. Plasma forms the top layer, red blood cells settle on the bottom and platelets and white blood cells sit together in a layer above the red blood cells. Label each layer. Colour the red cells in red, the plasma in yellow and the white blood cell/platelet layer in gray.



The Amazing Human Body Project

In this project you will be creating a "to scale" model (life size or smaller) of the human body, focusing on the major body systems we have been studying. You are to choose one body organ on your model that demonstrates the damaging effects that would occur from smoking. The majority of the project will be completed at home, due to the size of the models (no room here for storage!) **Please ask if you have any questions** or can't find items you need. I can help! If this project is worked on a little each day, there will be plenty of time to complete it on time. Included is a picture of the circulatory system to use as a guide. Have fun creating!

Considerations:

1. Create a "to scale" (life size if you wish) outline of the human body on cardboard or some other material. The dumpster outside of Sears is a great source of large, free cardboard.

2. The following body parts and organs should be included on your body, modeling the approximate size, shape, proportion and location of actual human organs:
    - Brain
    - Trachea
    - Lungs (maybe out of styrofoam?)
    - Diaphragm
    - Arteries and veins connected to the major body organs and all areas of the body (red for arteries, blue for veins, perhaps out of yarn or wire or ???)
    - 3-D heart that includes some of the major veins and arteries entering and leaving it (aorta, superior vena cava and inferior vena cava)
    - Esophagus
    - Stomach
    - Small intestine
    - Large intestine
    - Liver
    - Kidneys (stuffed nylons?)

3. All of the above organs/parts must be neatly and clearly labeled with correct spelling

4. One body part (your choice) show the damaging effects of smoking

5. Extra organs or body parts may be included and will be given extra marks, to a maximum of 5 marks. (eyes, nose, mouth, teeth, tongue, pancreas, bladder, gall bladder, ???, etc.)

6. Complete a Project Summary Sheet describing your learning and challenges during this project (to be done during class time).

The Amazing Human Body Project Criteria

Assess each criterion from 1-4, where 1 is not yet meeting expectations, 2 is approaching expectations, 3 is fully meeting and 4 is exceeding expectations…

Criteria:	**Student**	**Teacher**
1. Lungs are lifelike in size and shape, and both trachea and diaphragm are included	_____	_____
2. Kidneys and liver are the proper shape and appropriate size	_____	_____
3. Veins (blue) and arteries (red) ***each*** connect with all major organs and body parts	_____	_____
4. The heart is 3-D, is about the size of a fist, is slightly on the left side and shows the aorta and vena cava	_____	_____
5. The parts of the digestive system are the correct shape and size (stomach, esophagus, large and small intestine)	_____	_____
6. Brain is lifelike in position and size	_____	_____
7. One organ show the damaging effects of smoking	_____	_____
8. All body parts/organs are neatly labeled with correct spelling	_____	_____
9. Overall artistry, creativity and layout of model	_____	_____
10. Completed Project Summary Sheet	_____	_____

Comments:

Name: _____

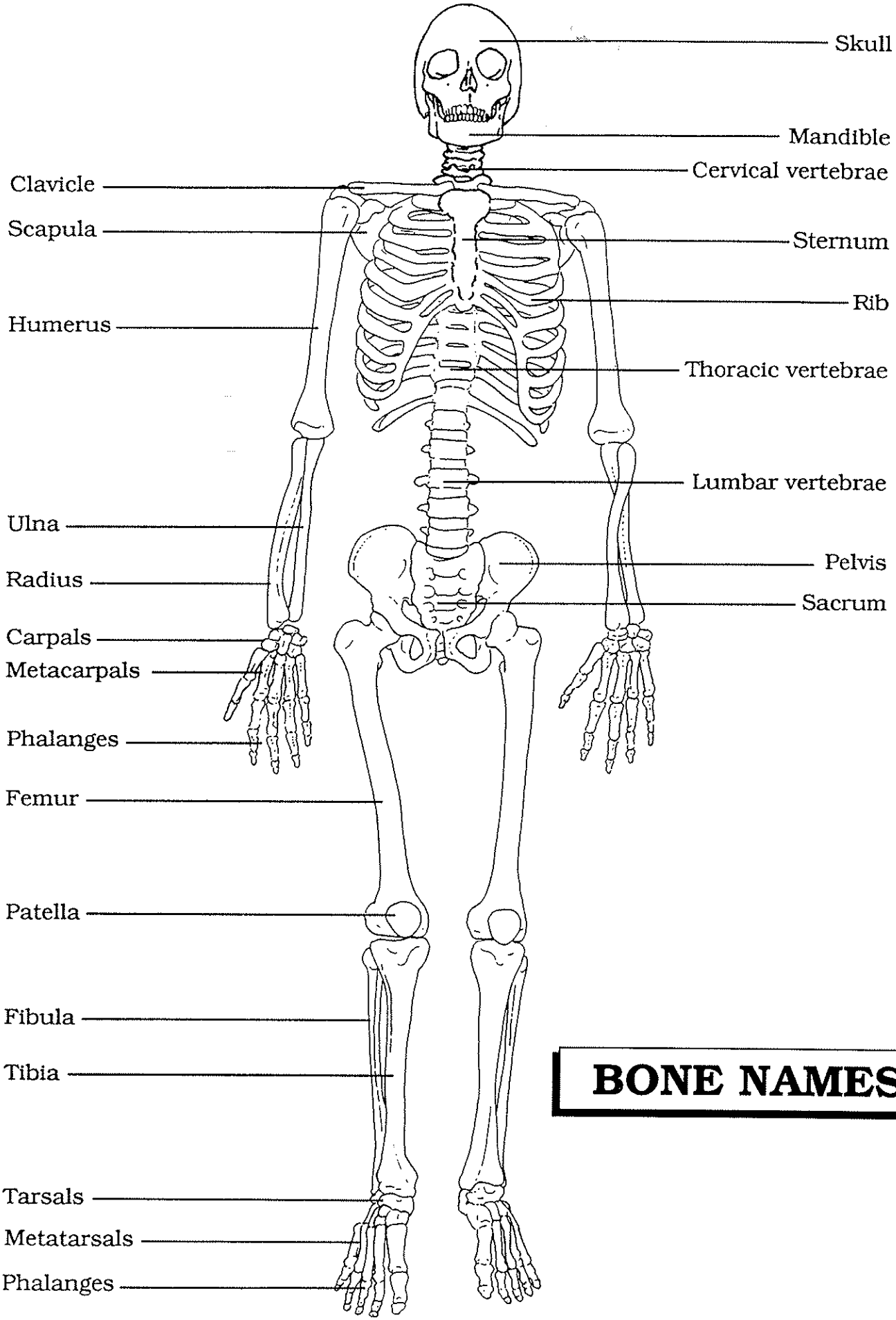
Project Summary Sheet

1. While doing this project I discovered the following things about the human body that I never knew before…

2. One of my biggest challenges doing this project was…

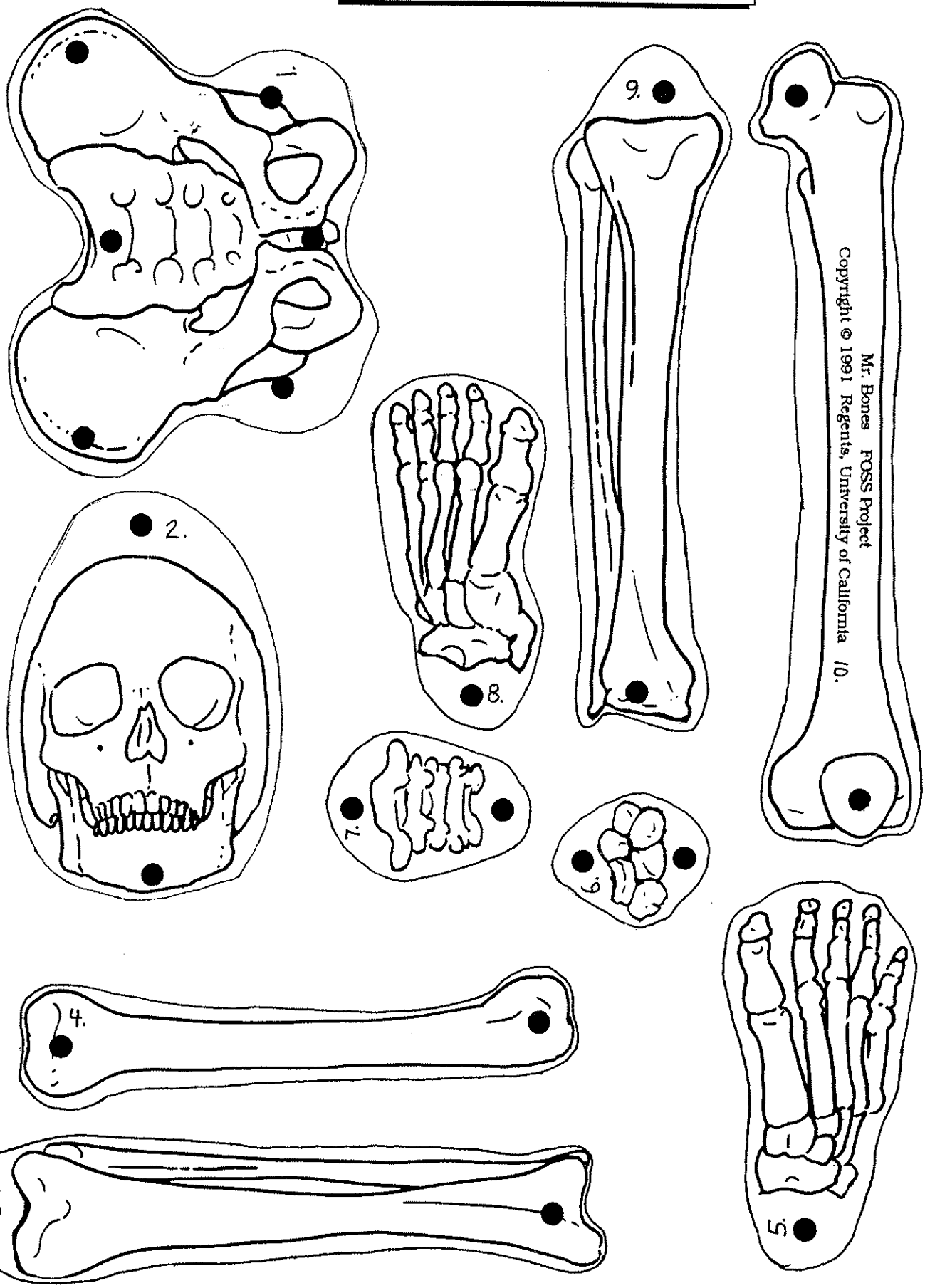
3. What I enjoyed most about this project was…

4. This project could be better for next year's class if… (what could we do to improve the project?)

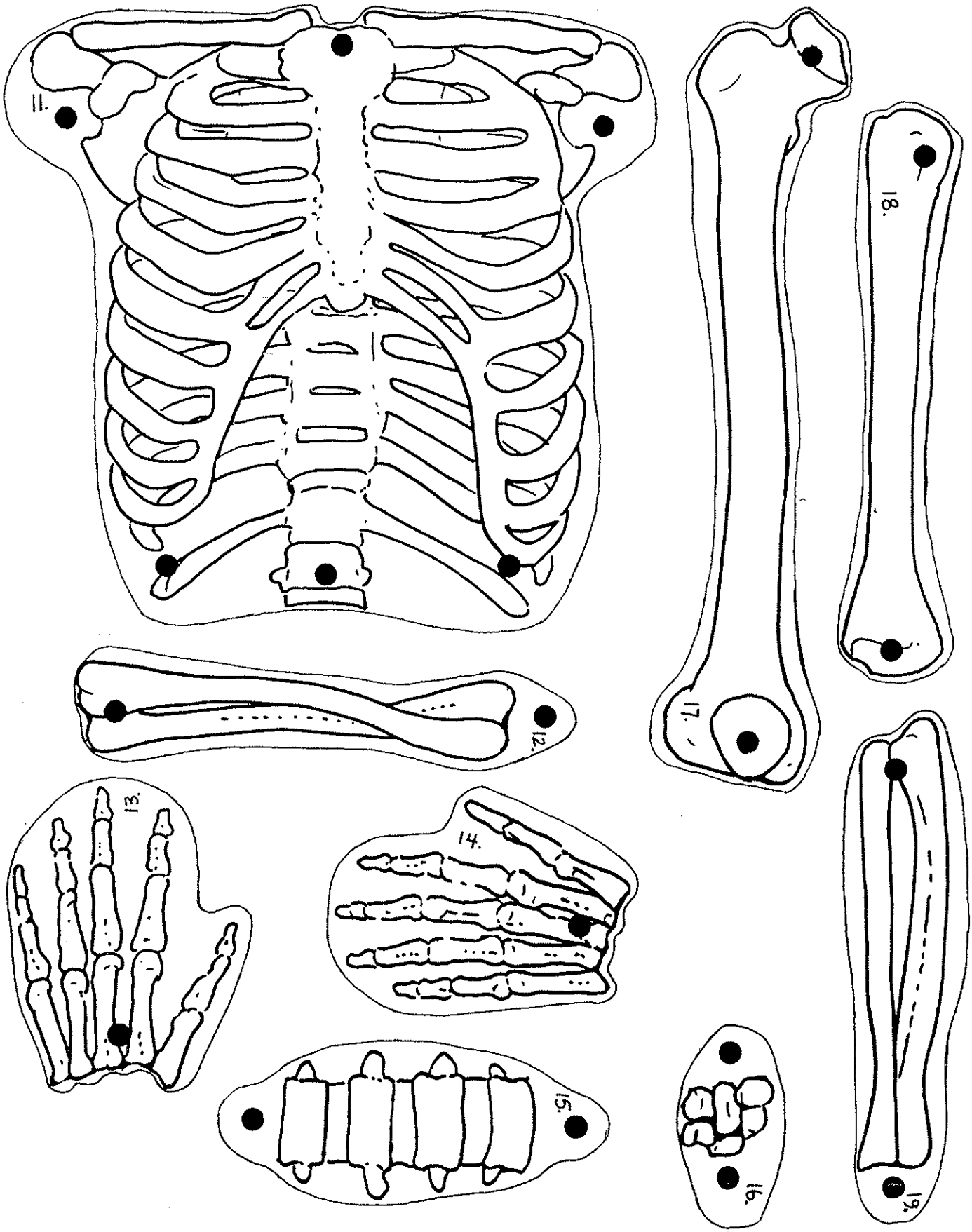


BONE NAMES

MR. BONES SHEET A



MR. BONES SHEET B



An electronic copy of this teacher guide can be found on Learn71 at
https://portal.sd71.bc.ca/group/wyhzgr4/Pages/default.aspx

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Published July 2016