



Construct-a-Skeleton

Curriculum-Linked Education Program Teacher Kit

This Teacher's Kit offers supplementary materials for the ***Construct-a-Skeleton*** Education Program. It is designed to be used in your classroom before and after your program booking. We hope it will help you and your students make the most of your visit to the Museum of Health Care.

Please make use of the activities included in this kit as appropriate to your schedule and objectives. If you have any questions about the materials included here or the upcoming visit, please do not hesitate to contact the Museum.

Thank you very much, and we look forward to working with you and your class.

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Curriculum Links

Health and Physical Education

Strand: Healthy Living

Topic: Understanding health Concepts

Overall Expectations

C1 Demonstrate an understanding of factors that contribute to healthy development;

C2 Demonstrate the ability to apply health knowledge and living skills to make reasoned decisions and take appropriate actions relating to their personal health and well-being;

C3 Demonstrate the ability to make connections that relate to health and well-being – how their choices and behaviours affect both themselves and others, and how factors in the world around them affect their own and others' health and well-being.

Specific Expectations

C1.1 Identify the key nutrients (*e.g., fat, carbohydrates, protein, vitamins, minerals*) provided by foods and beverages, and describe their importance for growth, health, learning, and physical performance

Science and Technology

Strand: Understanding Life Systems

Topic: Human Organ Systems

Fundamental Concepts: Structures and Functions

Big Ideas: Systems in the human body work together to meet our basic needs
Choices we make affect our organ systems and, in turn, our overall health

Overall Expectations

C1 Analyze the impact of human activities and technological innovations on human health

C3 Demonstrate an understanding of the structure and function of human body systems and interactions within and between systems.

Specific Expectations

1. Relating Science and Technology to the Environment

C1.1 Students will assess the effects of social and environmental factors on human health, and propose ways in which individuals can reduce the harmful effects of these factors and take advantage of those that are beneficial.

2. Developing Investigative and Communication Skills

C2.3 Students will design and build a model to demonstrate how organs or components of body systems in the human body work and interact with other components (*e.g., build a model that shows how muscles, bones, and joints in the human body work together as a system to allow movement of the arms or legs;*)

C2.4 Using appropriate science and technology terminology in oral and written communication.

Vocabulary Words

Vocabulary Word	Definition
Joints	The place where two bones meet
Double-jointed	A double jointed person can bend their joints more than the average person can, because the surrounding structures of their joints are unusually flexible.
Ball and Socket Joints	Made up of the rounded end of one bone, which fits into another bone which is shaped like a cup. A hip is an example of a ball and socket joint.
Calcium	An essential nutrient for strong bones, found in milk products.
Hinge Joints	The joints in your elbows and knees, which let you bend and straighten your arms and legs.
Patella	Covers and protects the knee joint
Femur	The thigh bone, the longest bone in your body
Humerus	Known as the “funny bone” because the word sounds like “humourous”, located between your shoulder and elbow.

Construct-a-Skeleton In-Museum Program Information

Description

Participants learn about the bones in the human body and then work in small groups to assemble a skeleton. They also learn about joint replacements in a mini-tour of "Joint Ventures." This activity can be used as one section of a school group or day camp visit.

Educational Outcome

At the end of the visit, participants will be able to:

- ❖ demonstrate the movement of hinge joints and ball and socket joints
- ❖ explain ways to help their bones grow properly, and ways to protect their bones during sports and other activities
- ❖ assemble a simplified skeleton of the human body

Length

- ❖ Approximately 20 minutes

Potential Audiences

This activity is appropriate for students aged six to ten. For older children, the Museum offers an advanced version of Construct-a-Skeleton, featuring a more complex Construct-a-Skeleton puzzle and a discussion of the history of joint replacements. Please request this alternative program if it would be more appropriate for your class.

Post-Museum Visit Activities

Suggestions for post-visit activities and class discussion:

1. Draw a Brainstorming Web on the board/chart paper with the heading "Healthy Bones." Begin a class discussion on the steps we can take to build strong bones.

Answers may include:

Healthy Eating:

- Balanced diet featuring all four food groups
- Limited treats
- Foods with lots of calcium

Healthy Living:

- Exercise (running, sports, swimming, stretching, etc)
- Making sure we are safe when we exercise (helmets, proper equipment, obeying game and safety rules)

2. Ask students to put together a three-day menu featuring a balanced diet and foods that help create strong, healthy bones. Students should research foods that are high in calcium (milk, yogurt, soy, salmon, etc) and incorporate the foods into their menus.
3. Students can complete a research project on a bone disease or medical condition. The causes and preventative measures, if applicable, of the disease should be included in the report. Some examples of bone diseases or conditions include: osteoporosis, osteomalacia, Paget's disease of bone, arthritis, bone spurs and hypophosphatasia.
4. Students can put together a warm-up exercise regimen for healthy bones. Load-bearing activities, including weight-lifting, jogging, and body-weight exercises like push-ups are all great for bone development!

Self Evaluation and Reflection

Name: _____

Learning Skills

N - Need improvement S - satisfactory work G - good work E - excellent work

Independent Work

- | | | | | |
|--|---|---|---|---|
| <input type="checkbox"/> worked well without supervision | N | S | G | E |
| <input type="checkbox"/> followed rules and instructions independently | N | S | G | E |

Initiative

- | | | | | |
|---|---|---|---|---|
| <input type="checkbox"/> responded to a new situation or challenge | N | S | G | E |
| <input type="checkbox"/> showed interest in the activity and a willingness to learn | N | S | G | E |

Use of Information

- | | | | | |
|--|---|---|---|---|
| <input type="checkbox"/> asked questions to clarify meaning and ensure understanding | N | S | G | E |
|--|---|---|---|---|

Cooperation

- | | | | | |
|--|---|---|---|---|
| <input type="checkbox"/> showed positive relationships with other students | N | S | G | E |
| <input type="checkbox"/> helped others | N | S | G | E |
| <input type="checkbox"/> shared in cleaning duties after an activity | N | S | G | E |

Conflict Resolution

- | | | | | |
|---|---|---|---|---|
| <input type="checkbox"/> resolved conflicts in socially accepted ways | N | S | G | E |
| <input type="checkbox"/> assisted others to resolve conflicts appropriately | N | S | G | E |

Class Participation

- | | | | | |
|---|---|---|---|---|
| <input type="checkbox"/> willingly worked with a new grouping | N | S | G | E |
| <input type="checkbox"/> took responsibility for my share of the work | N | S | G | E |
| <input type="checkbox"/> encouraged others to participate | N | S | G | E |

Problem Solving

- | | | | | |
|--|---|---|---|---|
| <input type="checkbox"/> applied successful strategies to new problem situations | N | S | G | E |
|--|---|---|---|---|

<p>What I did best during this activity:</p>	<p>What I need to improve on and how I will achieve that goal:</p>
<p>What I liked best about the activity and why I liked it:</p>	<p>What I would change about the activity if given the opportunity:</p>
<p>Something new I learned:</p>	<p>What I would like to learn more about:</p>

Teacher Resources

Government of Canada: Canada's Food Guide

http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/food-guide-aliment/view_eatwell_vue_bienmang-eng.pdf

A detailed colour copy of the Government of Canada's official food guide.

Neuroscience for Kids: "The Skull"

<http://faculty.washington.edu/chudler/skull.html>

Diagram and explanation of the different bones in the skull.

Science Kids: "Science Games for Kids"

<http://www.sciencekids.co.nz/gamesactivities/movinggrowing.html>

Simple online games about the human body.

KidsHealth: "The Facts about Broken Bones"

KidsHealth.org/kid/ill_injure/aches/broken_bones.html

List of the types of breaks and fractures that can occur and information on the healing process and treatment for broken and fractured bones.

KidsHealth: "Your Bones"

<http://kidshealth.org/kid/htbw/bones.html>

Detailed information on the parts of bones and joints, and the structure of different bones in the human body.