

The Canada Science and Technology Museum
presents

Cycle-ology

A Virtual Exploration of the Bicycle

Section 1: About This Guide



Introduction

Cycle-ology is a virtual program that invites students in Grades 4 through 6 to take part in exciting and engaging activities, discussions, and experiments that help them discover the world of bicycles. Through their virtual explorations, your students will learn the important historical and scientific significance of one of the greatest inventions ever created — the bicycle!

Background

It was in 1967 that the Canada Science and Technology Museum began collecting bicycles. Over the past 40 years, the collection has expanded to include a variety of cycles as well as accessories, literature and bicycle paraphernalia. By collecting, researching and preserving these wonderful artifacts, we are able to learn more about the impact that this technology has had on society. Through many of the virtual explorations listed in this program, students will explore the Museum's impressive cycle collection and discover examples of innovative bicycle technology from the early 1800s to today.

What this Exploration Guide can do for you

This Exploration Guide lets you and your students discover the historical, scientific and social principles behind the bicycle by using your school's Internet connections. Our activities and worksheets will enrich your exploration of the Canada Science and Technology Museum's web pages as well as other great sites. Blank worksheets and detailed examples can be freely reproduced to use in your classroom. Our activities are modular and can be completed independently.

In addition to learning about history and science and technology, the Exploration Guide's activities reinforce other skills such as mathematics, creativity, reading and writing. You will also find suggestions for classroom discussions, class projects and students' special projects.

Teachers may request an answer package for more detailed Activity Sheets by e-mailing virt_prog@technomuses.ca. Please allow at least a week for us to reply.



Navigating through the Exploration Guide

Currently, there are four sections to the Exploration Guide. Each section can be downloaded as a separate Adobe PDF file, allowing you to select the sections you want to use. Alternatively, you can download the entire Guide as a single Adobe PDF file. The content is identical in either case.

Section	Topic
1	Introduction (This Module)
2	Pedalling Through History
3	Cycling Science
4	Cycles in Society

Throughout the Exploration Guide, distinctive icons indicate features in the text. These help you find your way through the Exploration Guide quickly and efficiently.



Classroom activity



Discussion or essay topic



Deeper study



Site to visit

Curriculum Links

The Guide is cross-curricular, introducing elements from various curriculum divisions: Mathematics, Social Studies, Geography, Language Arts, and Science and Technology.

Links to the Pan-Canadian Common Framework

Learning Outcomes Grades 4 to 6

Science, Technology, Society and the Environment	107, 108
Skills	204; 205; 206; 207
Knowledge	300-13; 301-13; 301-14; 302-11; 303-30
Attitudes	410; 419

Ontario Science Curriculum

Grades 4 to 6	<ul style="list-style-type: none">• Structures and Mechanisms
Grade 5	<ul style="list-style-type: none">• Energy and Control
Grades 5 to 6	<ul style="list-style-type: none">• Matter and Materials

Ontario Mathematics Curriculum

Grades 4 to 6	<ul style="list-style-type: none">• Number Sense and Numeration• Measurement• Data Management and Probabilities
---------------	-------------------------------------------------------------------------------------------------------------------------------------------------

Ontario Social Studies Curriculum

Grade 4, 6: Canada and World Connections	<ul style="list-style-type: none">• Canada's Link to the World
---------------------------------------------	------------------------------------------------------------------------------

Ontario Arts Curriculum

Grades 4 to 6	<ul style="list-style-type: none">• Visual Arts• Drama
---------------	-------------------------------------------------------------------------------

Ontario Language Arts Curriculum

Grades 4 to 6	<ul style="list-style-type: none">• Reading, Writing, Oral Communication, Media Literacy
---------------	------------------------------------------------------------------------------------------------------------

Ontario Health and Physical Activity Curriculum

Grade 4	<ul style="list-style-type: none">• Healthy Living
---------	------------------------------------------------------------------

Quebec Curriculum

Mathematics, Science and Technology

To propose explanations for or solutions to scientific or technological problems

To explore the world of science and technology

To communicate in the languages used in science and technology

Geography, History and Citizenship Education

To interpret change in a society and its territory

English Language Arts

To read and listen to literary, popular and information-based texts

To write self-expressive, narrative and information-based texts

To use language to communicate and learn

Physical Education and Health

To adopt a healthy active lifestyle

Arts Education

To invent short scenes (Drama)

To produce media works in the visual arts (Visual Arts)

Cross-Curricular Competencies

To use creativity

To use information and communications technologies (ICT)

To cooperate with others

To communicate appropriately

Resource Information

Babaian, Sharon. **The Most Benevolent Machine: A Historical Assessment of Cycles in Canada**, Ottawa ON, Canada Science and Technology Museum, 1998
(may be ordered from the Museum)

Beeley, Serena. **A History of Bicycles**, London, Studio Editions, 1992

Erlbach, Arlene. **How It's Made: Bicycles**, Minneapolis MN, Lerner Publications Company, 1994

Humber, William. **Freewheeling The Story of Bicycling in Canada**, Erin ON, The Boston Mills Press, 1986

Lord, Trevor. **Amazing Bikes**, Toronto ON, Dorling Kindersley Limited, 1992

Ollerenshaw, Chris. **Gears**, Milwaukee WI, Gareth Stevens Publishing, 1994

Otfinoski, Steve. **Pedaling Along**, New York NY, 1997

Perry, David B. **Bike Cult: The Ultimate Guide to Human-Powered Vehicles**, New York NY, Four Walls Eight Windows, 1995

Pollard, Michael. **From Cycle to Spaceship: The Story of Transportation**, New York NY, Facts On File Publications, 1987

Transportation, Alexandria VA, Time Life Inc., 1992

Useful Web Sites

Notice Regarding Internet Sites

These Internet links are provided as a convenience only. We have taken care to suggest websites that are stable and are appropriate for education but we cannot guarantee the content of any sites not under the direct control of Canada Science and Technology Museum. These sites provide information for the activities presented in this Virtual Guide but performing subject searches will show up many more, also one of the objectives of this guide.

Since the Internet has a very dynamic nature, web addresses can change without warning.

Canada Science and Technology Museum **Cycles** web pages
<http://www.sciencetech.technomuses.ca/english/collection/cycles.cfm>

Canada Science and Technology Museum **Curator's Choice** web pages
<http://www.sciencetech.technomuses.ca/english/collection/bikes.cfm>

Canada Science and Technology Museum **Simple Machines** web page
http://www.sciencetech.technomuses.ca/english/schoolzone/Info_Simple_Machines2.cfm



Canada Science and Technology Museum **Energy** web page
http://www.sciencetech.technomuses.ca/english/schoolzone/Info_Energy.cfm#transportation

Exploratorium website
<http://www.exploratorium.edu/cycling/>

How Stuff Works website
<http://www.howstuffworks.com/bicycle.htm>

Society of Women Engineers website
http://www.swe.org/iac/lp/cycling_03.html

Transport Canada – Sustainable transportation web pages
<http://www.tc.gc.ca/environment/menu.htm#sustainable>

World Bicycle Relief website
<http://www.worldbicyclerelief.org/impact/index.php>

International Bicycle Fund website
<http://www.ibike.org/economics/work-bike.htm>

Public Health Agency of Canada – Canada Physical Activity Guide for Youth website
http://www.phac-aspc.gc.ca/pau-uap/paguide/child_youth/youth/index.html

Trans Canada Trail website
<http://www.tctrail.ca/thetrail.php>

Lance Armstrong website
<http://www.lancearmstrong.com/>

Official website of the Olympic Movement
http://www.olympic.org/uk/index_uk.asp