TEACHER'S KIT

Integrating immunization education into the Grade 6 curriculum

Immunize Immunisation Canada
immunize.ca

CELEBRATING IMMUNIZATION SUCCESS

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INTRODUCTION: STEP-BY-STEP POSTER ENTRY PLAN

Every other year, Immunize Canada organizes a National Immunization Poster Contest. This contest provides Grade 6 students across Canada with an opportunity to submit works of art reflecting their ideas on immunization for good health. The winning posters are subsequently reproduced and distributed in many formats. To view past contests and winners, please visit https://immunize.ca/national-immunization-poster-contest.

This kit provides teachers with resources and ideas organized by curriculum subject matter that may be used for preparing Grade 6 students with their poster contest entries.

Teacher's Plan

1. Introduce students to the poster contest. Discuss the rules, prizes and deadline for submission.

2. Introduce students to the concept of immunization by offering reading references, and organize class curriculum to include immunization information.

3. Discuss various themes and ideas with your students.

4. Encourage and support students with the preparation of their entries.

5. Mail your class entries by October 12, 2018 to:

   National Immunization Poster Contest
   c/o Canadian Public Health Association
   404 – 1525 Carling Avenue, Ottawa, Ontario K1Z 8R9

For additional assistance, please contact Immunize Canada at immunize@cpha.ca.

Good luck – and thank you for participating!

Immunize Canada thanks the Ontario Institute for Studies in Education (OISE) of the University of Toronto for reviewing this kit.

SCIENCE

How our bodies respond to invading bacteria and viruses is an important component of biology. Discuss with your students how our bodies work to expel unwanted invaders and how vaccines can help us do it.

Ideas for biology-related discussions:

How do our bodies get sick?

Bacteria and viruses are all around us. They live in our natural environment and on our bodies. These bacteria and viruses are usually harmless unless they enter our bodies. It is then that they can make us sick.

Bacteria and viruses can enter our bodies in several different ways:

1. through our nose and eyes,
2. through our mouth when we eat, drink and share other items such as toys with someone who is sick, or
3. through cuts, scrapes, or animal bites.

What is immunity?

When you get sick, your body generates antibodies to fight the disease and help you get better. These antibodies stay in your body even after the bacteria or virus has gone, and they protect you from getting infected with the same bacteria or virus again. This is called immunity. You don't have to get sick to develop immunity; you can be given a vaccine.

Immunity through immunization

Immunization (or vaccination) protects people from disease by introducing a vaccine containing an antigen (a killed or greatly weakened form of a virus) into the body. Vaccines work because they trick your body into thinking it is being attacked by a bacteria or virus and trigger your body's immune system to respond. Memory cells in the body are formed and help to prevent re-infection by making antibodies if they encounter that bacteria or virus in the future. Immunity through immunization happens without the consequence of being ill and without the risk of potential life-threatening complications from the bacteria or virus.

Discussion questions

1. How do bacteria and viruses enter your body?
2. What system in your body protects you from bacteria and viruses?
3. How do vaccines teach your body to fight bacteria and viruses that cause disease?
4. Bacteria and viruses are all around us. Do all of them make us sick?

SCIENCE

Bacteria and viruses live naturally all around us. They are very tiny and require a microscope should you wish to see them. Most bacteria and viruses pose no harm to humans – but some can make us very sick.

Vaccines help prevent us from becoming sick when we come into contact with some bacteria and viruses. They trick your body into thinking it is being attacked by a virus or bacteria, and trigger your body's immune system to respond. Memory cells in the body are formed and help to prevent re-infection by making antibodies if they encounter that bacteria or virus in the future.

Ideas for science-related activities:

Give your students an idea of what bacteria and viruses look like. Display collages of illustrations of germs, or assign science projects on vaccine-preventable diseases of the students' choice.

Materials: Paper, tracing paper, glue, coloured pencils or markers, science magazines, computers with Internet access (optional)

Instructions for collages:

1. Have the students find and trace images of germs on the Internet, in books or magazines. If the magazines are expendable, allow students to cut and paste the images. Other images to look for are the human body as seen medically (e.g., a picture of the nervous system or the skeletal system), pictures of medical equipment, etc. Artistically skilled students may wish to draw pictures rather than tracing or cutting them out.
2. Have the students paste the pictures onto plain pieces of cardboard. The teacher may wish to supply pieces that are cut into large letter shapes (VIRUS or VACCINE for a small class, or IMMUNIZATION for a large class) and have those letter shapes be the basis for the collage. Online photo collages can also be created.

*Please note that collages will **not** be accepted as entries for the poster contest.*

Instructions for science projects:

1. Choose a vaccine-preventable disease, such as measles, varicella (chicken pox), pertussis (whooping cough), tetanus (lockjaw), or influenza.
2. Have the students work alone or in groups to research basic aspects of the virus or bacteria they choose to study, such as: *Are bacteria contagious? Where they can be found?* and other interesting facts. Each student or group should now create a project incorporating all of the facts that they have found, with appropriate pictures, photocopies, or drawings.

Differentiated Instruction:

1. Students with fine motor skills problems may have difficulty cutting pictures out. If available, a computer art program will allow students to take graphics from the Internet and make an electronic collage.
2. Less visually-orientated students may find a collage difficult. Consider allowing in-class presentations or audio recordings as alternative products.

HEALTH AND CIVIC STUDIES

Vaccines used in Canada are very safe – much safer than the diseases they prevent. They are developed with the highest standards, and are continuously monitored and tested around the world and in Canada before they are approved for use.

Ideas for Health- and Civics-related activities:

Materials: Computer, Internet

Instructions:

1. With your students, consult the following websites and videos:

Government of Canada
Vaccine Safety
https://www.canada.ca/en/public-health/services/immunization/vaccine-safety.html

The Regulation of Vaccines for Human Use in Canada
https://www.canada.ca/en/health-canada/services/drugs-health-products/biologics-radiopharmaceuticals-genetic-therapies/activities/fact-sheets/regulation-vaccines-human-canada.html

Vaccine Safety in Canada
https://youtu.be/H0uun1gkPAE

Immunize Canada
Vaccine Safety
https://youtu.be/Y4N4_1PNtfk

Discover and discuss:

- how vaccines are made
- how vaccines are licensed in Canada
- vaccine safety in Canada

2. With your students, consult the provincial/territorial health ministry's website in your province or territory.

3. Discover and discuss how vaccines are delivered in your province or territory, and at the local/regional level.

SOCIAL STUDIES: HISTORY

Both vaccines and diseases have a long history. Throughout the world's history, different places have battled the spread of different diseases. The College of Physicians of Philadelphia (United States) has created a web site – http://www.historyofvaccines.org/ – dedicated to the history of disease and vaccines. This web site offers accurate information on the timelines of diseases across history, and the development of vaccines.

Ideas for History-related activities:

Materials: Books about vaccines, computer and Internet

Instructions:

1. Choose a vaccine-preventable disease, such as:
    - measles
    - varicella (chicken pox)
    - pertussis (whooping cough)
    - tetanus (lockjaw)
    - influenza
2. Have the students work alone or in groups to research the history of vaccine-preventable diseases. They should look for information about:
    - who was the first to identify the disease?
    - what was the impact of the disease?
    - when was the vaccine developed?
    - when did the vaccine become available in Canada?
3. Students can present their findings in the classroom with a history report, a presentation or work together in a history lesson.

Differentiated Instruction:

Encourage students to do in-depth research about the history of one disease that we now immunize people against. Students may hand in a report instead of presenting aloud to the class, or create a video.

SOCIAL STUDIES: GEOGRAPHY

Over time, countries and communities have experienced disease outbreaks. Unfortunately, diseases know no boundaries and can often be transported from one country to another without detection. This importation of disease facilitates its spread across continents. The geography of disease poses a challenge for governments and medical professionals who work tirelessly to stop the spread of disease – through vaccination.

Ideas for Geography-related activities:

Materials: Computer, LCD projector (optional), video equipment (optional), geographical maps

Instructions:

1. Choose a vaccine-preventable disease, such as:
    - measles
    - varicella (chicken pox)
    - pertussis (whooping cough)
    - tetanus (lockjaw)
    - influenza
2. Have the students work alone or in groups to research outbreaks of vaccine-preventable diseases all over the world.

    They should look for information about:
    - the history of the disease and where it has originated
    - through a historical context, how the disease spread across countries or regions
3. Students can present their findings in the classroom with a geography report, a presentation or work together in a geography lesson.

Differentiated Instruction:

Encourage students to do in-depth research about the geography of one disease that we now immunize people against. Students may hand in a report instead of presenting aloud to the class, or create a short video.

PHYSICAL EDUCATION

Diseases can spread very quickly. Use a physical education environment to show how quickly diseases can spread.

Ideas for Physical Education-related activities:

Materials: A large clear area such as a gymnasium or field.

Instructions for "Contagious Disease":

1. Have two students face each other and join their hands to form a small circle. They are the "disease". The disease must chase other members of the class and try to catch them. A person "catches the disease" when the "disease" students capture him or her within the circle of their arms by lifting their joined hands over the "victim's" head. The students being the disease may not let go of each other's hands during the chase or the capture.
2. When a student is captured, he or she joins the disease by entering the circle, making it three students holding hands in an inward-facing circle. They then try to capture another student. The last student free of the disease is "healthy" and wins the game.
3. Play the game again, but this time, choose a second pair of students to be "immunizers". The second pair competes with the first to capture students. Any student caught by the second pair of students joins the immunizer group. There should be no students remaining at the end of the game. Count the number of students in each group and see if the "disease" or the "immunizers" won.
4. Play the game again, choosing three pairs of students to be the "disease". Explain that all of the students have been immunized except for one secret "victim". Only the "victim" should know who he or she is. They do NOT have to join the group that caught them. The game ends when the one "unimmunized" student (i.e. the "victim") is caught by a group and the disease cannot grow anymore.
5. Play one more round of the game, by the same rules as last time, but without a "victim". Allow the students acting the disease to switch with others who haven't had a chance to play if the runners seem to be over-tired.
6. Afterwards, discuss how much harder it is for the disease to grow when some people are immunized against it, and how it is close to impossible for the disease to grow if everyone in immunized. Point out that when no one was immunized, almost the whole class was caught by the disease. While people were getting immunized, only half of the class was caught. When all but one person were immunized, the disease could grow by that one person; and when everyone was immunized, the disease could not grow at all.

Differentiated Instruction:

If this game is played in wheelchairs, use only one person as the "disease", and use a tag method rather than constant contact. After three or four students have been tagged, they may encircle their "victims".

MATHEMATICS

Introduce the basic concepts of series or powers using simple and more complex word problems.

Ideas for Mathematics-related activities:

Materials: Chalkboard, chalk, paper, pencils, coloured pencils or markers (optional)

Instructions:

1. Have the students start with simple problems and work up to harder ones. Examples:
   (a) If I had mumps, and I gave it to 2 friends, how many people did I infect?
   (b) If I had mumps, and I gave it to 2 friends, and they each gave it to 2 friends, how many people did I infect?
   (c)If I had mumps and gave it to 2 friends, who gave it to 2 friends, and so on, how many people were infected by me when we are five layers down?

   (First-level friends = 2; second = 4; third = 8; fourth = 16; fifth = 32. Answer = 62.)
2. Use several problems of this nature written out the long way, to introduce the idea of powers. Teach notation $2^3 = 2 \times 2 \times 2 = 8$.
3. If this notation is too advanced, use the original "levels" concept, and vary the number of people infected at each level. Note how quickly one small illness could spread.

Differentiated Instruction:

1. For some students, allow each level of multiplication to be drawn in a different colour. Thus "I" would be yellow, "my 2 friends" orange, "their 2 friends" each in red, etc. Students then count physical objects rather than relying on mental math.
2. Consider allowing some students to learn how to use the powers button on a calculator.
3. For students who excel in Mathematics, add a time limit, or a population limit. Example: Every time a sixth level of infection is reached, the first level (smallest, uppermost level) is cured. How many are infected at any one time? In a population of *x*, how many levels does it take before everyone has been infected? If there is a population of 100, and the people recover after two levels, but half of them can be re-infected, how many levels before the number of infected people drops to 1?

LANGUAGE ARTS

Use literature as a means for creating and writing short stories, poems, plays, reports and articles about vaccine-preventable diseases.

Ideas for Language Arts-related activities:

Materials: Computer, Internet, videos, books, short stories, or news articles

Instructions:

1. Encourage students to read stories in which disease or outbreaks influence the story. Examples include news articles or stories about the 1918 influenza epidemic, the 2009 H1N1 influenza pandemic, and polio.
2. Ask students to describe the disease, how it affected the story, and whether the impact was permanent or temporary.
3. Have students write a news article about the disease that they looked at, explaining to the public its dangers and whether or not it can be prevented by vaccine.
4. Other student activities could include:
    - filming a video
    - writing and performing a play
    - designing a brochure

Differentiated Instruction:

1. Offer the option of writing diary entries or a short story from the point of view of the virus as it makes people ill.
2. Creative students may prefer doing a radio show about germs with commercials for immunization and "interviews" with prominent germs and even "missing persons" bulletins for extinct viruses such as smallpox, or endangered ones like wild poliovirus, which has been eliminated in the Americas.
3. Some students may use the Internet to compile a list of reputable pages with information on immunization.

CREATING A POSTER

Now it is time for your students to create their posters and show what they have learned through the activities you used to introduce them the concept of immunization.

Objective:

Students will:

1. Explore what vaccines are and understand how vaccines work.

2. Create posters about the benefits of immunization for the National Immunization Poster Contest for Grade 6 students.

Background information:

Consult the reference list at the end of this kit for useful information that can be shared in the classroom.

Materials needed:

11"x17" paper
Markers, paint or coloured pencils

Procedure:

1. Provide art materials for poster creation. The posters must:
    - be original artwork only
    - be on 11"x17" paper, landscape orientation only
    - address immunization
2. Ensure that each completed poster has its own entry form, **glued** to the reverse side of the poster, clearly identifying the school, teacher, and student. All forms must be **signed** by a parent or guardian (giving permission to reproduce the winning posters and winners' names).
3. Mail your students' posters. The deadline is **October 12, 2018**.

ACTIVITY: WORD FIND

Find the words listed below and circle each letter individually. The words can go up, down, diagonally, or backwards. The first one is already in bold for you. After you have found all of the words on the list, collect the remaining letters from left to right, top to bottom, and you will get this puzzle's message. Good luck!

S	E	L	S	A	E	M	S	A	F	E	T	Y	I	D	M
U	I	K	I	D	S	G	E	O	M	Y	U	N	V	I	R
N	I	C	E	L	L	E	R	I	I	S	P	A	Z	P	U
A	N	N	K	I	I	R	U	N	U	L	C	P	A	H	B
T	F	A	F	G	F	M	M	R	A	C	O	L	A	T	E
E	E	I	**A**	A	E	S	I	T	I	T	A	P	E	H	L
T	C	R	**C**	R	N	V	L	N	L	R	G	K	E	E	L
S	T	E	**E**	O	I	T	A	D	S	U	E	A	F	R	A
I	I	T	**L**	T	O	T	S	R	B	D	L	T	E	I	R
S	O	C	**L**	C	E	W	E	L	L	T	A	H	S	A	S
S	N	A	**U**	O	B	R	O	T	H	E	R	D	R	I	Y
U	E	B	**L**	D	D	A	L	Y	M	O	M	E	U	T	S
T	R	E	**A**	T	O	A	Z	N	E	U	L	F	N	I	T
R	A	E	**R**	A	S	H	N	E	R	D	L	I	H	C	E
E	A	D	O	L	E	S	C	E	N	T	S	P	M	U	M
P	O	X	I	M	M	U	N	I	Z	A	T	I	O	N	S

ACELLULAR
ADOLESCENTS
AREA
BACTERIA
BROTHER
BUG
CELL
CHILDREN
DAD
DIPHTHERIA
DOCTOR
DOSE
GERMS
HAPPY
HEALTHY
HEPATITIS
IMMUNIZATION
INFANTS
INFECTION
INFLUENZA
KIDS
LIFE
MEASLES
MOM
MUMPS
NURSE
PAL
PERTUSSIS
POLIO
POX
RARE
RUBELLA
SAFETY
SERUM
SICK
SISTER
SYSTEMS
TETANUS
TREAT
VACCINATE
VIRUS
WELL

Leftover letters: _

ACTIVITY: QUIZ

Immunize Canada has developed a quiz for Grade 6 students called 20 Questions about Immunization. The quiz can be downloaded from Immunize Canada's website and used in the classroom. 20 Questions about Immunization: Understanding the Correct Answers is the answer key.

References

ONLINE RESOURCES:

Immunize Canada https://immunize.ca
What is Immunization?
Diseases & Vaccines
Immunization for Every Child
Immunization Information on the Internet: Can you trust what you read?
Immunization: Get the Facts
Credible online resources about immunization: for students
'20 Questions about Immunization' quiz
'20 Questions about Immunization: Understanding the Correct Answers' answer key
Children's activities

Immunize Canada – social media:
Immunize Canada's Facebook page
Immunize Canada's Twitter account
Immunize Canada's YouTube channel

Canadian Public Health Association
Immunization timeline

Government of Canada
A Parent's Guide to Vaccination
Get the facts about immunization
Provincial and Territorial Immunization Information (including links to provincial/territorial ministries of health)
Vaccine Safety
The Regulation of Vaccines for Human Use in Canada
Don't wait – vaccinate! A Guide to Immunization for First Nations Parents and Caregivers
Don't wait – vaccinate! A Guide to Immunization for Inuit Parents and Caregivers

Other
BIOTECanada: Vaccines in Canada
History of Vaccines (United States)
History of Vaccines timeline (United States)
CANImmunize app

VIDEOS:

Immunize Canada
Vaccine Safety

Government of Canada
Vaccine Safety in Canada

BOOKS:

Immunize Canada's website provides a list of books recommended for children, including:

- *Achoo! The Most Interesting Book You'll Ever Read About Germs,* by Trudee Romanek, Kids Can Press, 2003
- *All About Vaccines (Dinosaur Learning Series)*, by Bridget Gongol, 2014
- *Bill Nye, the Science Guy's Great Big Book of Tiny Germs,* Bill Nye, 2005
- *Carnival of Contagion (graphic novel),* by Judy Diamond, Bob Hall, and John West, 2017
- *Choosing Health,* by Alan Collinson, in the Facing the Future series, Steck-Vaughan Library, 1991
- *Dear Canada: To Stand on My Own: The Polio Epidemic Diary of Noreen Robertson, Saskatoon, Saskatchewan, 1937*, by Barbara Haworth-Attard, 2010
- *Everything You Need to Know About: Measles and Rubella,* by Trisha Hawkins, The Need to Know Library, The Rosen Publishing Group, Inc., 2001
- *Germ Killers: Fighting Disease,* by Sally Morgan, Science at the Edge Series, Reed Educational & Professional Publishing, 2002

- *Immunity Warriors* (digital comic), CANImmunize, 2017
- *It's Catching: the Infectious World of Germs and Microbes,* by Jennifer Gardy, 2014
- *Jonas Salk and the Polio Vaccine* (graphic novel), by Katherine Krohn, 2006
- *Microbiology: It's a Small World,* by Simon Basher and Dan Green, 2015
- *The Miracle of Immunity,* by William Donnellan, from the "Story of Science" series by Benchmark Books, 2003
- *My Health: Vaccinations,* by Alvin Silverstein and Virginia Silverstein, Franklin Watts, 2002
- *My Health: What Are Germs?* by Laura Silverstein-Nunn, Alvin Silverstein and Virginia Silverstein, Franklin Watts, 2003
- *Outbreak: Disease Detectives at Work,* by Mark Friedlander Jr., Lerner Publications, 2003
- *Sara, Lily and Aaron: Vaccine,* by Judy Konkoly, 2010
- *The Shots Book: A Little Brother's Superhero Tale,* by Ethan Posard, 2015
- *Small Steps: The Year I Got Polio,* by Peg Kehret, Albert Whitman, 2006
- *A True Book: Flu,* by Ann O. Squire and Jane Sieving Pelkki, 2016
- *What Are Germs?,* by Jim Ollhoff, 2010
- *You Wouldn't Want to Live Without Vaccinations!,* by Anne Rooney, 2015

Your Child's Best Shot: A Parent's Guide to Vaccination, 4th edition, ed. Dorothy L. Moore, MD. Published by the Canadian Paediatric Society.

RESOURCES ON MEDIA LITERACY AND INTERNET SAFETY:

Media Smarts: Canada's Centre for Digital and Media Literacy

Media Literacy Fundamentals
http://mediasmarts.ca/digital-media-literacy/general-information/digital-media-literacy-fundamentals/media-literacy-fundamentals

Resources for Teachers: Internet & Mobile
http://mediasmarts.ca/internet-mobile/resources-teachers-internet-mobile

Teaching Your Children Safe Surfing Habits
http://mediasmarts.ca/sites/mediasmarts/files/pdfs/tipsheet/TipSheet_%20Safe_Surfing_Habits.pdf

Jo Cool or Jo Fool
http://mediasmarts.ca/game/jo-cool-or-jo-fool-grades-6-8
This interactive online module takes students through a cybertour of twelve mock websites to test their savvy surfing skills. It includes a 20-question online quiz that provides additional food for thought about the Web issues that the brother and sister team Josie and Joseph Cool encounter. Jo Cool or Jo Fool is accompanied by an extensive Teacher's Guide that contains background information for teachers, and questions and classroom activities for students, about online issues such as marketing, privacy, safety, responsible Internet use and authenticating information.

How to recognize false content online – the new 5 Ws
http://mediasmarts.ca/teacher-resources/how-recognize-false-content-online-new-5-ws